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THE BOVINE TUBERCLE BACILLUS IN HUMAN TUBERCULOSIS

ITS OCCURRENCE ON THE WITWATERSRAND

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Former investigations to ascertain the extent of bovine tuberculosis in the population of South Africa have been recorded by the folllowing workers: Pirie [1, 2] examined 198 strains of M. tuberculosis, 100 from Witwatersrand Native mine workers and 98 from other cases in the Union of bone, joint, gland and meningeal tuberculosis, but no bovine strains were found. Harington and Emerson [3] in Port Elizabeth examined 44 strains from human sources and later another 56 (personal communication), and of these 100 strains one was proved to be of bovine type, recovered from the stool of a European child. Investigating a case of tuberculous meningitis in Johannesburg, Du Toit and Buchanan [4] identified a bovine strain isolated from the cerebrospinal fluid of a young European female. More recently Coetzee [5] recorded the results of an extensive investigation of tuberculous meningitis in the Western Province of the Cape of Good Hope. He examined 200 strains of M. tuberculosis isolated from ante-mortem and post-mortem cerebro-spinal fluids and basal exudates. The bovine type was identified in 2 instances. Thus of the above 499 strains examined, 4 were of bovine origin.

PRESENT INVESTIGATION

This was initially planned to enquire into the types occurring in primary abdominal tuberculosis, especially in the non-European population, but the work gradually grew to include the examination of varied specimens, except sputa, from other races. Although specimens continue to be received and a number are *sub judice* the results are now presented of the examination of 266 from a like number of cases comprising 218 Native, 37 European, 8 Coloured and 3 Indian patients.

Material and Methods. The material examined and the results obtained therewith are presented together in the following table:

ANALYSIS OF 266 SPECIMENS EXAMINED FROM THE SEVERAL RACES, THE NUMBER OF HUMAN AND BOVINE TYPES IDENTIFIED AND the NEGATIVE RESULTS

	Human	*Bovine*	*Negative*
Natives			
Abdominal specimens ..	13	4	11
Glands and pus from glands	69	0	28
Pus other sites	17	1	3
Cerebro-spinal fluids ..	17	0	3
Bone and joint tissue ..	12	1	6
Tonsils	0	0	8
Skin ulcers	3	0	12
Urines and miscellaneous ..	6	0	4
Europeans			
Cerebro-spinal fluids ..	7	4	2
Pus	6	0	1
Urines	7	1	0
Pus from spine	2	0	1
Tonsils	0	0	2
Glands, gastric fluid ..	2	0	2
Coloured			
Abdominal specimens ..	2	1	0
Pus and glands	2	0	3
Indians			
Abdominal specimens ..	1	1	0
Pus	1	0	0
Totals	167	13	86

Preparation of Specimens. (after Petroff.[6]) Most of the material consisted of tissues which were prepared by fragmenting with sterile scissors, grinding in a sterile mortar, digesting with 4% KOH for 15-30 minutes at 37° C and neutralizing with 4% HCl. The tissue suspension was transferred to sterile tubes and centrifuged, and the supernatant fluid was withdrawn. The sediment was inoculated into cultures and into the right groin of guinea pigs; when little was obtained only animal inoculation was done. Specimens of pus were inoculated

direct into cultures and guinea pigs and the tissue sediments into separate cultures and animals. Direct smears of tissue sediments and pus were examined microscopically.

Requisite Specifications for Measuring Virulence. Bloch [7] remarks that 'the system of host and parasite comprises so many variables that the virulence of a given strain can be measured only when certain specifications are clearly stated'. These follow seriatim with remarks applicable to the present work.

(*a*) *Manner in which the bacteria were grown.* Although modifications of existing culture media have been devised, older favourites with which one had had previous experience were used at first. These were Petragnani's, Lowenstein-Jensen's and Youman's media, with and without glycerin. The second, both for the growth of human and bovine strains, proved superior to the other two; later, therefore Petragnani's was not included; Youman's medium was chiefly employed for the purpose of sensitivity tests, the results of which are outside the scope of this paper. The cultures were kept in the dark, since exposure to daylight and sunlight is stated to reduce the number of viable organisms and also affects virulence.

(*b*) *Age of the cultures.* The growth on Lowenstein-Jensen medium was used for typing purposes in rabbits. The age of the cultures of the human strains tested varied from 25 to 70 days—not just when adequate growth occurred in some cases. The age of the bovine strains from the time of primary growth varied from 82 to 178 days, but younger subcultures made from the primary growths were employed for rabbit inoculation.

(*c*) and (*d*) *Size of infective dose. Route of infection.* The preparation of cultures for typing was done as described in the Bulletin of the World Health Organization (Cummings [8]) and the infective dose recommended therein was 0·10 mg., which was injected into the marginal ear vein of the rabbits. The first 30 strains isolated were dealt with as described in the above Bulletin, but later rabbits only were employed for typing purposes.

(*e*) *Age and weight of animals.* The age of the animals was not known but their weights varied between 1,270 and 2,470 grams.

(*f*) *Manner in which the animals were kept* (food and cages). Their diet comprised varying amounts of mealie meal, bran, crushed oats, lucerne, peanut, meat, salt bone-meal, and calcium carbonate. Each rabbit was kept in a separate, suspended wire cage.

(*g*) *Coexistence of concomitant infection.* In two of the rabbits the liver showed a few small coccidial nodules, but the others were free from concomitant infection which might influence the course of tuberculosis.

(*h*) *Criteria used to judge the severity of the disease.* The loss of weight, the extent of the macroscopic lesions, and microscopic examination of the organs as later described, were the criteria used in this respect.

Cultural characters of the strains isolated. The human strains were all definitely eugonic, grew luxuriantly on Lowenstein-Jensen medium with glycerin, and presented a raised, dry, warty, buff-coloured growth. The bovine, or dysgonic, strains grew slowly on this medium minus glycerin and showed a thin whitish filmy growth with a moist surface. Although the cultural features are not considered reliable for type determination, nevertheless experience gained with the first 30 strains, 27 of which were eugonic and 3 dysgonic and which behaved as human and bovine strains respectively in rabbits, definitely eugonic strains were later not subjected to rabbit inoculation.

Results of typing by rabbit inoculation. The animals inoculated with the first 27 *eugonic* strains all survived over 3 months, they gained markedly in weight, and at autopsy the lungs were not enlarged and either showed discrete tuberculosis areas (Fig. 1) or none at all; the other organs appeared normal.

The *dysgonic* strains caused the animals to lose weight, except in 2 instances where a slight gain of 28 and 15 grams was found at death. The others lost between 300 to 600 grams, and all of them died within 19-52 days. At autopsy all showed voluminous lungs filling the chest cavity and studded with large and small tuberculous areas, visible tubercles were present in some of the spleens and kidneys, but tubercles in the livers were not always observable (Fig. 1). Histological examination of these organs confirmed the presence of generalized tuberculosis in all of the rabbits—criteria accepted as indicative of the bovine type of *M. tuberculosis.* Younger rabbits are stated to be more susceptible than older fully-grown ones; this did not wholly obtain in this work, for some of the older and heavier animals inoculated with bovine strains died as early as younger and lighter ones, i.e. between the 21st and 28th day.

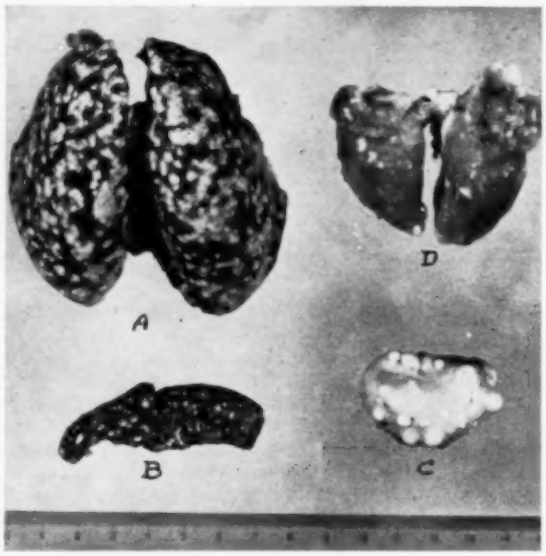

Fig. 1. Photograph of rabbit organs fixed in formalin. A—lungs, B—spleen, C—kidney; exemplifying the tuberculous lesions caused by the bovine strains of human origin. The lungs of the other rabbits inoculated with such strains were similar to those depicted, but the foci in the spleens and kidneys were not always so pronounced.

D—lungs; showing discrete tuberculous lesions caused by the human type of M. tuberculosis. Not all the rabbit lungs showed such visible reaction to the human type.

COMMENTS

In the histories of the 4 Native patients from whom the bovine type was recovered no clinical evidence of pulmonary tuberculosis was recorded. Three of the patients were young males, 6, 13 and 14 years old. Abdominal symptoms were the presenting feature; the small specimens of peritoneum or omentum received were obtained at laparotomy. The 4th patient was also a male, aged 36 years, with multiple *fistula in ano*; from the granulation tissue the bovine type was isolated.

Of the 13 abdominal specimens from Native patients from which the human type was identified, 7 had pulmonary tuberculosis, in 3 no chest lesion was found, and in the remaining 3 no record of chest examination was noted.

In the table, from 'pus other sites' a bovine strain is recorded. This was isolated from pus obtained from the breast of a Native female 38 years old. The patient had a swollen and painful right breast of 2 weeks' duration and stated she was 6-months pregnant. The history also recorded that the breast was grossly septic, oozing much pus, and over the right deltoid region pus exuded. Nothing abnormal was found in the chest, mediastinum or abdomen. The patient was discharged one month after treatment with penicillin, streptomycin and 'Rimifon'. Unfortunately no record of the presence of secondary organisms was noted.

The European patient whose urine yielded a bovine strain was stated to have no focus of tuberculosis other than that found in the urinary system.

It will be noted in the table that the bovine type occurred in 4 of the 13 cerebrospinal fluids from European patients, 2 of whom were children; the ages of the other 2 were not stated in the notes received. On the other hand none of 20 such fluids from Native patients showed the presence of the bovine type.

The Coloured female patient from whom a bovine strain was isolated had mesenteric adenitis and from one of the glands this type was recovered. The notes did not state that other systems were involved.

In the history of the Indian patient, a male, it was recorded that a hemi-colectomy was done for what looked like a hyperplastic ileo-caecal tuberculosis; glands from the ileo-caecal region gave a growth of a bovine strain. No history of pulmonary tuberculosis was recorded.

As regards culture *versus* guinea-pig inoculation for the recovery of the tubercle bacillus it may be said that in this work 5 specimens gave positive results in cultures but yielded negative results in guinea-pigs, while 7 specimens proved positive in guinea pigs but negative in cultures.

SUMMARY OF RESULTS

In this investigation 180 strains of *M. tuberculosis* were isolated from 266 specimens received from a like number of patients. The material was obtained from subjects living on the Witwatersrand. The specimens from Natives numbered 218, from Europeans 37 and from Coloured and Indian patients 8 and 3 respectively.

The bovine type was identified in 13 of the 180 strains isolated, i.e. 7·2%

From Native patients 143 strains were isolated, of which 6 were of bovine type, i.e. 4·1%.

From Europeans 29 strains were recovered, 5 of which were bovine strains, i.e. 17·2%.

As only 8 specimens were received from Coloured and 3 from Indian patients this small number is insufficient to assess the true incidence of bovine tuberculosis in these races but reference to the table indicates its occurrence.

I am indebted to the Director for granting the opportunity and facilities to carry out this investigation and for criticism. It is also desired to thank the following for their coöperation in supplying specimens: Drs. D. Tanne, Horwitz and Simson, Baragwanath Non-European Hospital; Dr. Keen, Non-European Hospital; Mr. K. Allen, Princess Nursing Home; and Dr. von Haebler of this Institute, who diverted tuberculous material for typing purposes initially examined in the routine department. Dr. A. R. P. Walker of the Institute's Human Biochemistry Unit kindly assisted in arranging the meticulous weighing of culture growths for animal inoculation.

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WHO EXPERT COMMITTEE CONSIDERS DIFFERENT TYPES OF ALCOHOLISM

Drinking habits vary to such an extent from one country to another that they give rise to different problems of alcoholism, both from the curative and the preventive, or public health, point of view. This was one of the major questions discussed by the joint meeting of the WHO Expert Committees on Mental Health and on Alcohol, in a week's session at the Palais des Nations, Geneva, under the Chairmanship of Professor Jorge Mardones, Instituto de Investigaciones sobre Alcoholisme, Universidad de Chile, Santiago. Experts from six countries attended.

The most striking difference, the Committee was told, exists between countries where distilled spirits are rapidly consumed, frequently leading, even after an intake of medium quantities, to amnesias, and those countries where wine or beer drinking is predominant. The blackout phenomenon, which consists of loss of memory, is common in Anglo-Saxon and Nordic countries, but is almost entirely unknown in the wine and beer drinking countries.

In the wine-drinking, and some of the beer-drinking countries, drinkers will take in wine and beer day in, day out, from early rising till retiring to sleep. Comparatively little overt drunkenness is seen, but the resultant alcoholism can lead to serious physical disturbances—such as cirrhosis of the liver—and also constitutes a grave public health problem.

With heavy spirit drinkers, after an initial phase during which spirits may be drunk daily in comparatively constant quantities, the habit may change to 'drinking bouts' leading to severe intoxication. Such a drinker may subsequently find himself compelled to continue drinking, in the bout, and will ingest alcohol in increasing quantities until he is stopped by loss of consciousness, or other internal or external factors. After the bout, there is often a short or even long period of abstinence, but 'loss of control', as this phenomenon is called, is evident once a drinking bout has started.

The Committees' conclusions will undoubtedly lead to more suitable curative and public health measures which can be taken effectively to deal with these different types of alcoholism. A report is being compiled and will be distributed to the public health authorities concerned, after it has been approved by the WHO Executive Board.

South African Medical Journal

Suid-Afrikaanse Tydskrif vir Geneeskunde

EDITORIAL

SOURCES OF FOOD

The need for new sources of human food becomes urgent as with improved social conditions the population of the world continues to increase and greater demands for food are made by races or classes which in the past have suffered under-nourishment. A series of articles by Dr. F. W. Fox on the agricultural basis of nutrition in South Africa has been published in this *Journal* in recent months and is now approaching completion. Emphasis is laid in all countries on the need for good farming, crop rotation, fertilization, the prevention of agricultural disease, the use of insecticides, etc., and to meet the ever-increasing demands for food other sources than traditional farming are being studied.[1, 2]

Laboratory studies have shown that the unicellular photosynthetic organism *Chlorella* can be made to yield 30 (to 60) tons of dry *Chlorella* per acre; approximately 15 tons of protein and 2 or more tons of fat can thus be obtained. The method however is expensive.

Suggestions have also been made that the vegetation now grown should be used in a more economical manner. It is pointed out that only a small portion of plant crops is eaten directly by man, and that most of it is used for animals as food or bedding, and much goes to waste. A greater quantity of food would be available for man if the plant crops were eaten direct, instead of after their conversion to animal tissue. This conversion is essentially wasteful because an animal transforms plant-material into human food with an over-all efficiency of only 5–10% or at most up to 30%. Again, if synthetic fibres could be used for the manufacture of fabrics required by man instead of animal or vegetable fibres a saving of much vegetation now used for the raw material of textiles might be made, and food crops produced instead.

With all this in view it has to be noted that plants, rich as they are in carbohydrates, fats and vitamins, are generally, apart from the seeds of many legumes, poor in the quantity and quality of their protein. The production of crops rich in protein would be of very

VAN DIE REDAKSIE

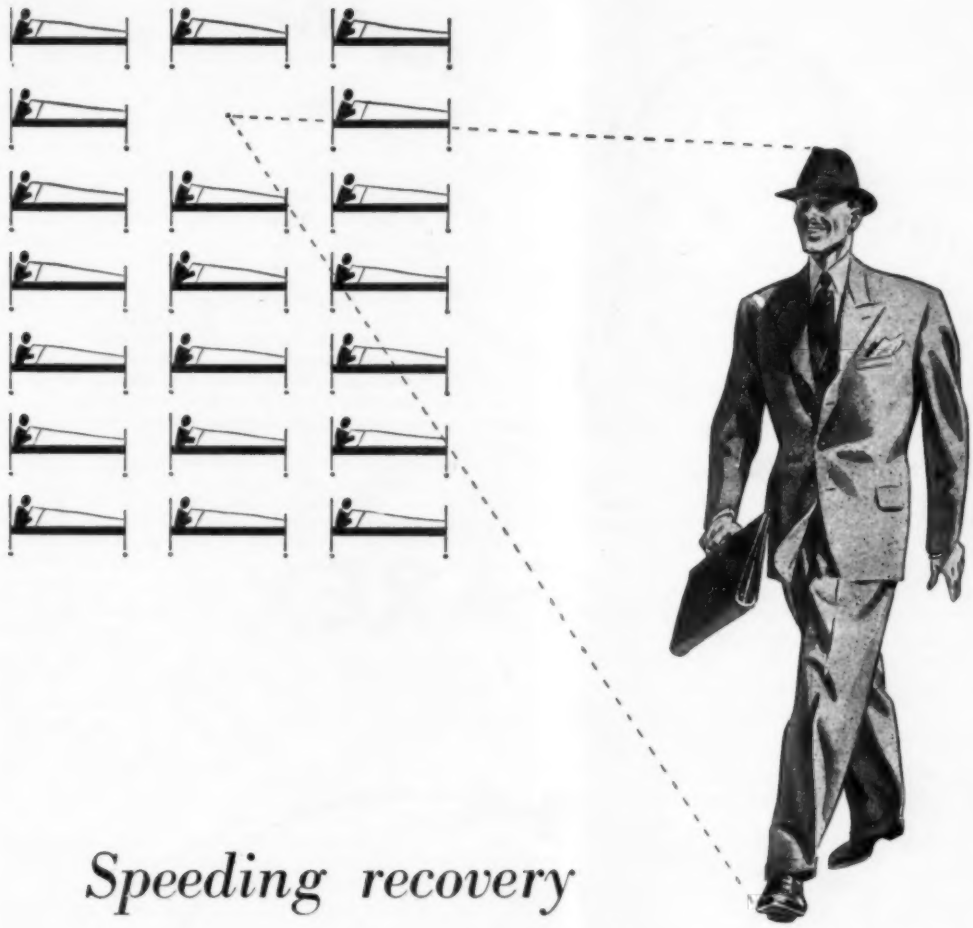
VOEDSELBRONNE

Dit is noodsaaklik on nuwe voedselbronne te vind aangesien verbeterde maatskaplike toestande 'n steeds toenemende wêreldbevolking in die hand werk en 'n groter aanvraag na voedsel deur rasse of klasse wat voorheen aan ondervoeding gely het. 'n Reeks artikels deur dr. F. W. Fox oor die landboukundige grondslag van voeding in Suid-Afrika het in die afgelope maande in hierdie *Tydskrif* verskyn en nader nou voltooiing. Die noodsaaklikheid van gesonde boerdery, wisseloeste, bemesting, bestryding van landbousiektes, en die gebruik van insektegif word in alle lande beklemtoon en om in die steeds toenemende voedselvereistes te voorsien word ander voedselbronne buiten en behalwe tradisionele landbou ondersoek.[1, 2, 3]

Laboratoriumstudies het getoon dat *Chlorella*, 'n eensellige fotosintetiese organisme, 30 tot 60 ton droë *Chlorella* per akker kan oplewer; nagenoeg 15 ton proteïen en 2 of meer ton vet kan op hierdie manier verkry word, maar dit is 'n duur proses.

Aantuigings is ook gemaak dat die plante wat ons nou kweek meer ekonomies verbruik moet word. Daar word op gewys dat slegs 'n klein deel van plantoeste regstreeks as voedsel deur die mens verbruik word, dat die grootste deel as voedsel en beddegoed vir diere gebruik word en dat heelwat verlore gaan. Daar sal meer kos vir die mensdom beskikbaar wees as plant-oeste direk geëet word, en nie eers nadat dit in diereweefsel omskep is nie. Hierdie omskepping is in hoofsaak verkwistend daar diere plantstowwe in kos vir menslike verbruik omskep met 'n gemiddelde doeltreffendheid van slegs 5–10% en op sy hoogste 30%. Ook as sintetiese vesel i.p.v. diere- en plantvesel vir die vervaardiging van weefselstowwe gebruik word, kan meer plante vir voedsel gekweek word.

Met al die bogaande gegewens in gedagte moet dit nie uit die oog verloor word nie dat plante alhoewel ryk aan koolhidrate, vette en vitamiene, gewoonlik, met uitsondering van die meeste peulplantsade, arm aan proteïene is, beide wat gehalte en hoeveelheid betref. Oeste, ryk aan proteïene, sal uiters waardevol wees. Dit word beweer dat die proteïengehalte van jong groeiende blare en blare, wat gedeeltelik in die skaduwee groei, hoog is.



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great value. Young growing leaves and leaves growing in partial shade are stated to have high protein content.

The extensive use of micro-organisms, especially yeast, to convert inorganic nitrogen into protein has been suggested; moreover, they produce vitamins. A half ton of yeast grown under favourable conditions might produce 51 tons of protein in 24 hours. Other micro-organisms, such as *Chlorella*, have also been studied.

The chemical transformation of inedible natural products into food, e.g. the preparation of dextrose from sawdust has been successfully started on an industrial scale. Although there is a natural scepticism about the appetising qualities of food from these sources, to these sources mankind may some day be compelled to turn for food.

More delectable is the vast amount of nutritious food available in the sea. More than 71% of the earth's surface is covered with water, and it is from the northern hemisphere that the fish and shellfish eaten by man is mostly obtained. The far greater oceans of the southern hemisphere are by comparison untouched. Apart from fish, it has been estimated that because of its great productivity the sea is capable of yielding food that could be harvested in greater amount than land crops, without any tilling, irrigation or fertilization.

Large seaweeds have long found use as fertilizers and soil-conditioners. From early times they have been used for their high mineral content as manure for depleted soils. The feeding of animals with seaweed as a supplementary ration is also an old practice. The Chinese and Japanese eat seaweed. In food industries water-soluble polysaccharides from certain algae are being used as stabilizers, and to replace gelatin in ice cream and chocolate milk. An edible sausage casing has been prepared from Norwegian seaweed, and is apparently preferable to cellophane skin.

Besides seaweed there remains to be mentioned the greater part of sea-growing plant-life, e.g. the microscopic phytoplankton. It contains all the main food principles (protein, fat, carbohydrate, minerals). The large-scale mechanical collection of plankton for use as food was suggested during the war. Whales which feed on plankton grow very rapidly on it. With suitable nets or other filter apparatus it should be possible to collect plankton; harmful metabolic products might have to be eliminated. An enormous mass of living organisms feeding near the ocean surface at night goes down to a lower level during the day. Echo-sounding devices can detect this migration, and great quantities of these creatures could be sucked up through hoses, or could be made to swim to the anode of electrical devices and there collected.

There is a vast quantity of nutritious material available in this marine crop, and it seems unlikely that any detectable decrease in the marine population could be produced by man if he seriously undertook the extraction of this kind of foodstuff from the ocean.

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Dit word aan die hand gegee dat mikro-organismes, vernaamlik suurdeeg, op groot skaal gebruik word om onorganiese stikstof in proteïen om te skep; boonop produseer hul ook vitamiene. Onder gunstige omstandighede kan 'n halwe ton suurdeeg 51 ton proteïen binne 24 uur oplewer. Ander mikro-organismes, soos bv. *Chlorella*, is ook bestudeer.

Die chemiese omsetting van oneetbare natuurstowwe in voedsel bv. die bereiding van dektrose uit saagsels, is alreeds op nywerheidskaal met welslae aangepak. Alhoewel daar natuurlik twyfel bestaan omtrent die smaaklikheid van sulke kossoorte, kan dit gebeur dat die mens in die toekoms genoodsaak sal wees om sy toevlug tot sulke voedselbronne te neem.

Die ontsaglike en voedsame kosvoorrade van die see is meer aantreklik. Meer as 71% van die aarde se oppervlakte is met water bedek en meeste van die vis en skulpvis wat geëet word, word van die noordelike halfrond verkry. Die oseane van die suidelike halfrond is baie groter en vergelykenderwys is hul nog nie ontgin nie. Afgesien van visse, word dit bereken dat vanweë die see se groot produktiwiteit dit groter oeste kan oplewer as die land, en dit sonder bebouing, besproeiing of bemesting.

Die groter seewiersoorte word vanaf die vroegste tyd vir grondbemesting gebruik en uitgeputte landerye word deur hul hoë mineraal-inhoud verryk. Dit is ook 'n ou gebruik om seegras as aanvullende voer vir vee te gebruik. In Sjina en Japan word seewiere as kos genuttig. In die voedselbedryf word wateroplosbare polisakkaroses wat van sekere algae verkry word as stabiliseerders gebruik en ook om gelatien te vervang in die vervaarding van roomys en melksjokolade. Uit Norweegse seegrasse word worsomhulsels berei wat oënskynlik beter aan die doel beantwoord as sellofaanomhulsels.

Afgesien van die seegrasse moet melding gemaak word van die grootste deel van die plantlewe wat in die see aangetref word bv. die mikroskopiese fitoplankton. Die bevat al die hoofvoedselbestanddele (proteïen, vet, koolhidrate, minerale). Gedurende die oorlog is die voorstel gemaak dat plankton vir voedselgebruik op groot skaal meganies versamel word. Walvisse wat op plankton lewe groei baie vinnig. Met geskikte apparaat behoort dit moontlik te wees om plankton in te samel en enige skadelike metabolisme-produkte te elimineer. 'n Ontsaglike massa lewende organismes wat snags naby die see-oppervlakte wei, trek bedags na 'n laer vlak. Hierdie trek kan deur middel van instrumente opgespoor word en groot hoeveelhede van hierdie diertjies kan met spuitslange opgesuig word of gedwing word om na die anode van elektrisiteits-apparate te swem om daar ingesamel te word.

Reusagtige hoeveelhede voedsel kan uit die see verkry word en dit is onwaarskynlik dat enige afname in marine-lewe bespeur sal word as die mens hierdie seevoedsel op groot skaal oes.

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DUODENAL ULCER WITH ACHLORHYDRIA

REPORT OF A CASE

I. SACKS, M.D. (ABERD.)

National Hospital, Bloemfontein

The patient, a police officer, aged 45, married, was sent in for investigation for supposed attacks of angina pectoris.

Complaint. Pain in the left arm accompanied by headache. Pain in the praecordium. Upper abdominal pain with flatulence.

History. He was first seen on 22 July 1952. As a boy he used to get attacks of lower abdominal colicky pain. For some years he has had pain in the epigastrium with tenderness on pressure. Belching used to give him relief. In previous years he suffered from heartburn but this has ceased. His epigastric pain is not definitely related to the taking of food and he has had no nausea or vomiting. Some days before this examination, after attending a rugby match where he had become very excited, he suffered intense pain in the left upper arm and headache relieved by aspirin. Three nights later he woke with severe pain in the left arm, shoulder and elbow, headache and a feeling of illness. He perspired profusely and this was followed by a jerky feeling in the left arm. He has had similar, though less severe, attacks since then. The praecordial pain was not related to effort or rest but he became slightly dyspnoeic and tired on effort. He smokes 25 cigarettes a day.

Examination. He does not look ill or distressed. The respiratory, urogenital, articular and cardiovascular systems are all normal and the cardiogram is normal. There is some tenderness on pressure over the gall-bladder and only slight tenderness in the epigastrium. No enlargement of the liver or spleen. It was felt that a cholecystogram and a barium meal should be done before deciding that this was a case of angina pectoris. The cholecystogram was normal and the barium meal showed nothing abnormal in the stomach. There was fairly marked pylorospasm and the duodenal cap filled and emptied fleetingly. The cap had smooth outlines and no evidence of ulceration was found. The mucosal pattern of the small bowel visualized presented normal features (Fig. 1).

In view of these X-ray reports I advised that I was still more hesitant about diagnosing angina pectoris, especially as this diagnosis might handicap his future in the service. It was thought that the marked pylorospasm and irritability of the duodenal cap might be due to an underlying condition even though the ulcer could not be demonstrated radiologically. It was suggested that an ulcer regime be followed and the barium meal repeated at a later date. This treatment was applied and on 23 May 1952 the barium meal showed that the stomach was normal, that there was no pylorospasm and that the duodenal cap filled and emptied fleetingly. Some difficulty was experienced in getting the duodenal cap filled; there was slight irregularity of contour but no ulcer crater could be demonstrated (Fig. 2).

On 28 May 1952 the patient said he felt better. He had less upper abdominal pain and no praecordial pain. He had no feeling of constriction in the chest. Belching was still troublesome. On examination he was found to have tenderness in the epigastrium and, for the first time, over McBurney's point. He was advised

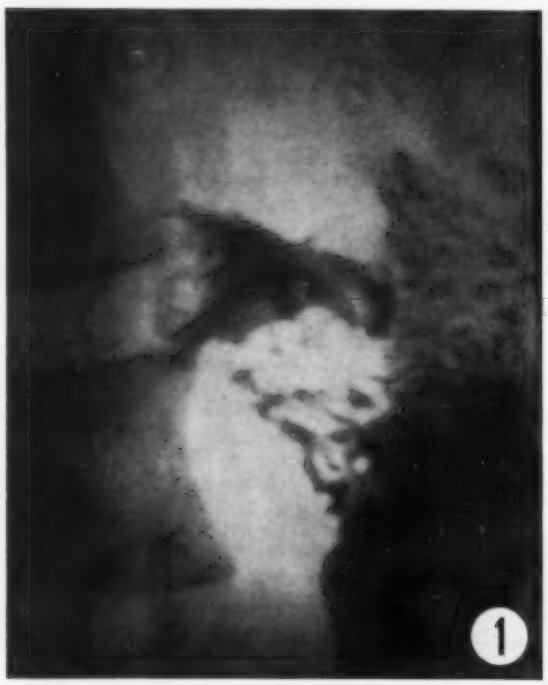

Fig 1. Barium meal. Irritable duodenal cap. No definite ulcer demonstrated.

Fig. 2. Barium meal. Spastic duodenal cap with constant incisura but no definite ulcer niche.

to resume duties, but on 9 June 1952 he complained of flatulence after meals and pain in the left arm and so he was advised to enter hospital. The stool was found to be negative for occult blood and parasites. The blood Eagle test was negative. Fractional gastric analysis showed a histamine-fast achlorhydria. On 8 July 1952 the barium-meal examination showed that the duodenal cap was irritable and a spastic incisura was found on the greater curvature with an ulcer niche bearing all the stigmata of activity present on the same side (Fig. 3).

On 10 July 1952 the benzidine test for occult blood was found to be positive and a repeat gastric analysis, with the tube shown by X-rays to be in the stomach, again showed a histamine-fast achlorhydria.

On 13 July 1952 the barium meal was repeated by a different radiologist, who reported that there was fairly marked pylorospasm and a very definite ulcer niche on the greater curvature side of the duodenal bulb, and that the gastric analysis tube was present in the stomach. Sixteen localized projections of the duo-

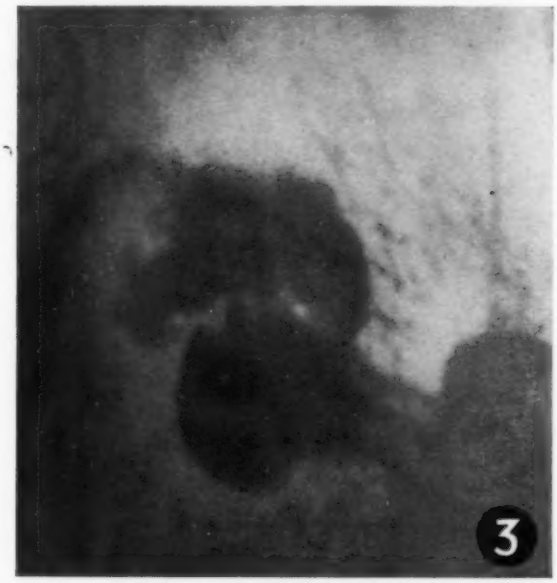

Fig. 3. Barium meal. Ulcer demonstrated on duodenal cap.

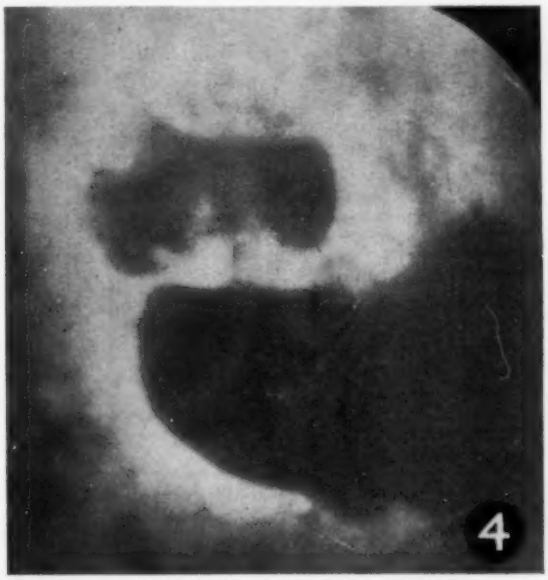

Fig. 4. Barium meal. Duodenal cap. Constant incisura and definite ulcer niche in the exact position previously noted in Fig. 3.

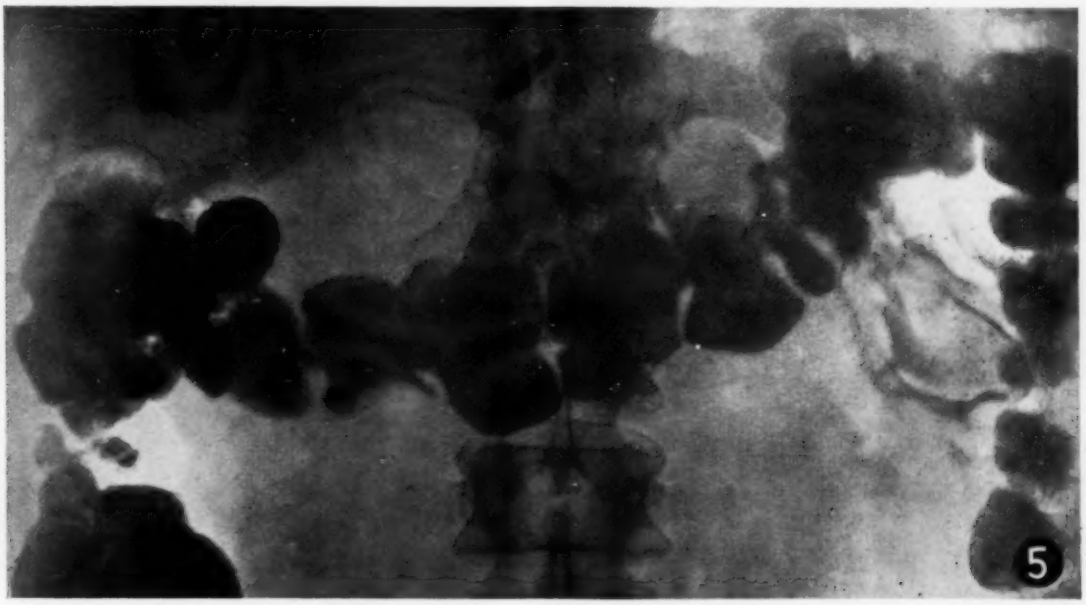

Fig. 5. Appendix meal and proof of gastric analysis tube in the stomach.

Fig. 7. Gastric analysis tube in position in the stomach.

denum showed that the constant incisura on the lesser curvature, previously reported, was absent, suggesting that the condition was subsiding (Fig. 4). The appendix was found to be diseased by clinical and radiological examination and appendicectomy was done. These films also confirmed that the gastric analysis tube was in position (Figs. 5 and 7).

Fig. 6. Barium meal. Ulcer on duodenal cap subsiding. Incisura still present but less marked.

Fig. 8. Barium meal. Ulcer healed.

On 11 August 1952 a control barium meal showed that some minor pylorospasm was still present and that there was a small ulcer niche in exactly the same position as previously demonstrated. The ulcer was smaller and the irritability of the duodenal cap less (Fig. 6). The patient was allowed to go home and continue the ulcer regime. One month later he said he felt well except for flatulence, and the barium meal then showed that the duodenal cap filled well and there was no irritability or deformity, but the previously-reported ulcer could no longer be detected (Fig. 8).

DISCUSSION

One feels that this is a proved case of duodenal ulcer in the presence of a histamine-fast achlorhydria. This is confirmed through the various stages by X-rays, and the tube has been proved to be in situ. X-ray healing corresponded with the cessation of his symptoms as reported by his doctor on 3 February 1953. The late Sir Arthur Hurst [1] stated that, in his opinion, peptic ulcer with achlorhydria was quite rare and that he had never seen a case of duodenal ulcer with achlorhydria. He doubted whether a peptic ulcer ever developed in the absence of free hydrochloric acid.

A. J. Kauver and L. W. Leiter [2] say that it is generally accepted that benign duodenal ulcer does not develop in the presence of achlorhydria and they quote Washburn and Rosendal, Palmer and Nutter, and Rickets *et al.* They state that cases have been averred, from time to time, and mention two cases diagnosed as duodenal ulcers, clinically and radiologically, but in which operation failed to disclose duodenal ulcers. They say that in no case has adequate evidence been offered to substantiate such a condition. Monat is quoted as saying that in 500 Navy patients he saw several cases but the reviewers add that he says nothing of his technique of gastric analysis or whether histamine was injected or not. Palmer and Nutter are quoted as stating that in a series of 2,200 cases of proved gastric and duodenal ulcers no instance of persistent achlorhydria was encountered. The reviewers state that it is generally recognized that duodenal deformity, while most commonly due to chronic duodenal ulcer, is not an acceptable criterion *per se* for the diagnosis, and certainly not in the presence of achlorhydria, but that the presence of a niche or crater is held to be pathognomonic of active ulcer (F. E. Templeton, M. Feldman, G. Rigler).

SUMMARY

A case of duodenal ulcer in the presence of a histamine-fast achlorhydria is presented notwithstanding the opinion of authorities. The achlorhydria has been fully proved and the tube has been proved to be in the stomach. Three different radiologists have taken the series of X-ray films. Cessation of the patient's symptoms corresponded with radiological healing. One notes the length of time it took for the ulcer to heal.

I am greatly indebted to the late Dr. L. Morel for permission to publish the case and to the radiologists Dr. Ross Garner, Dr. P. Dreyer and Dr. R. Tahan for their help.

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A METHOD OF EXCRETORY UROGRAPHY IN CHILDREN

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Since their introduction in 1923, techniques in excretory urography have made many renal pathological conditions diagnosable. They consist in the intravenous, intramuscular or subcutaneous administration of a dye which is excreted and concentrated by the kidneys and is opaque to X-rays. It is in the adult that this method of renal diagnosis is most useful; in children it is not so satisfactory. A survey of excretory urography reports in young children shows an astonishingly high proportion of cases where renal defination was so poor that no definite opinion could be given and resort had therefore to be had to subsequent retrograde pyelography. Indeed, it would appear that the ordinary techniques of excretory urography are not really of much value in young children.

The major factors contributing to the poor visualization of the renal outline which is obtained in the child are the following:

1. The relatively high fluid-intake causes a great dilution of the dye in the urine, which militates against adequate concentration.

2. The presence of loops of bowel filled with gas or faeces frustrates visualization (see Fig. 1).

3. Preparation of the child for pyelography is more difficult than preparation of the adult. Prolonged limitation of fluids is not practicable because thirst induces crying and the swallowing of air. This results in gas in the bowel, which further obscures the faint dye concentration.

4. After a painful injection it is difficult to gain the full co-operation of a child.

5. It is often difficult to find an adequate vein and in consequence the intramuscular or subcutaneous route has to be used for administering the dye.

To improve the quality of visualization in children in spite of these difficulties the following methods have been used:

1. Increasing the quantity of dye used.

2. Various methods of diminishing the amount of intestinal gas.

3. Postural control of intestinal gas.

4. The use of hyalase to increase the absorption of dye after subcutaenous or intramuscular administration.

Though these methods were of some assistance, the

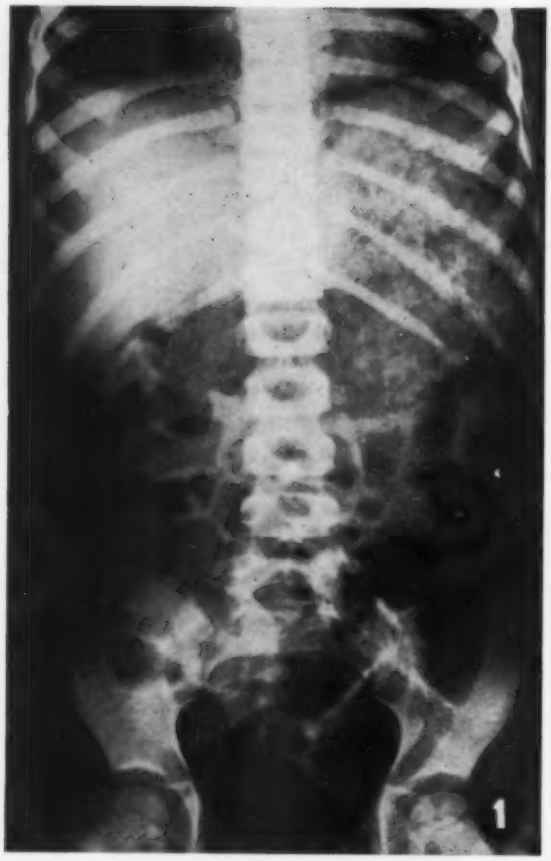

Fig. 1. Plain X-ray plate of child without urography. Note that the faeces- and air-filled loops of bowel completely cover the renal area, and would obscure any dye concentration in the kidneys.

degree of improvement in the quality of the plates was not great.

In 1944 however, Christiansen,[2] utilizing the capacity of the infant stomach for distension, introduced a simple technique for improving excretory urography. By giving the child ordinary 'soda water' he produced such dilatation of the stomach that the loops of small bowel were displaced downwards. As a result the dye concentration in the kidney was seen through the medium of air and plates of excellent quality were produced.

A disadvantage of the Christiansen technique is that, although the gas-filled stomach invariably overlies the left kidney, the right kidney is generally not covered by the stomach but is still obscured by loops of small bowel (see Fig. 2). The problem which presented itself therefore was to find a method whereby both kidneys would be covered by the gas-filled stomach. This I found could be successfully achieved by the following technique:

1. The bowel is prepared by administration of a simple enema (this is most important in the preparation of the child for a pyelogram).
2. Fluids are withheld for a 12-hour period.
3. The dye is preferably administered intravenously. Where this is impossible, the intramuscular route is preferable to the subcutaneous. In the latter two routes the dye is mixed with hyalase to facilitate more rapid absorption.
4. An aerated drink is given 10 minutes after the injection of the dye, by which time there should be sufficient concentration of dye in the kidneys. Belching is discouraged.
5. Plates are taken in the erect position and, to ensure that the right kidney is covered by the gas-distended

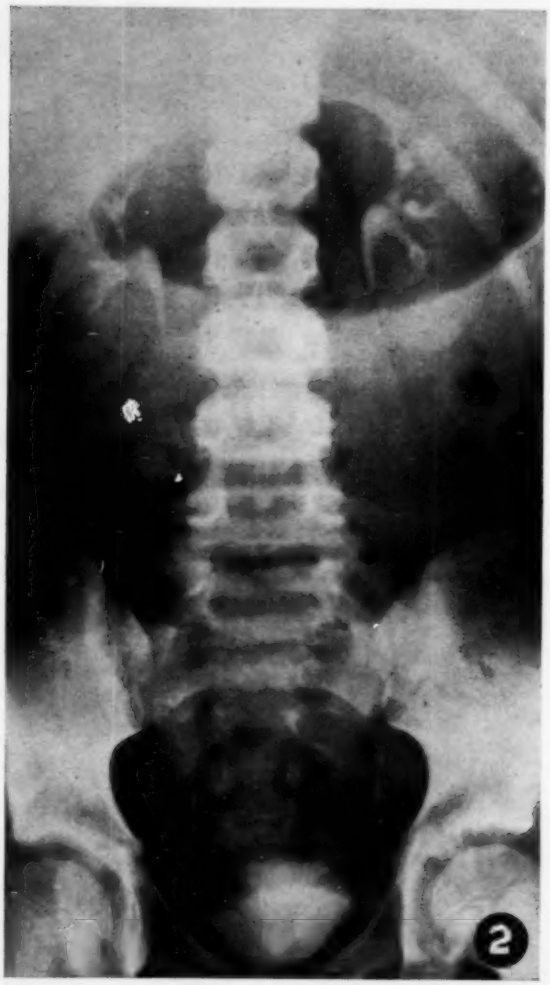

Fig. 2. Ten-minute plate after intramuscular administration of dye. The stomach shows marked distension and completely overlies the left, but only partially overlies the right kidney. Excellent visualization of the renal pelvis and calyces with some defination of renal outline.

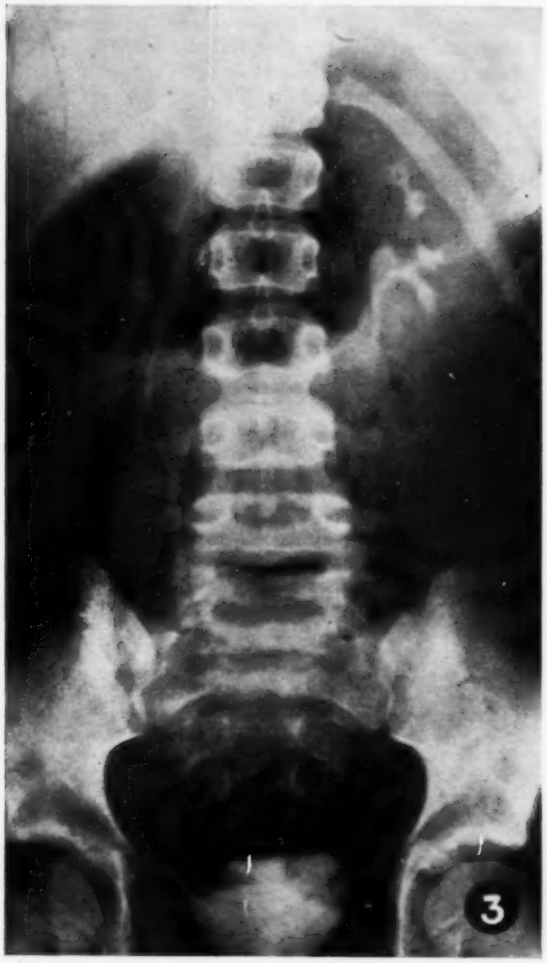

Fig. 3. Shows effect of medial compression of left lower ribs in causing gastric distortion. Note that the distorted air-filled stomach now overlies the right kidney.

stomach, medial compression is made over the left lower ribs, which produces marked displacement of the stomach to the right (see Fig. 3).

As a result of withholding fluid for 12 hours the child gulps readily and thirstily at the cool drink. This produces the desired result, namely a large and rapid dilatation of the stomach. The giving of a refreshing cold drink after the painful injection restores some degree of confidence and co-operation in the child. As the exposure of the kidneys is through the medium of the gas-filled stomach, the delicate dye shadows in the kidney are not overshadowed and hidden by the gas-filled loops of gut.

Various other methods of increasing the amount of gastric distension were tried, and it became apparent that the method here described, viz. gassy drink combined with compression technique, does produce X-ray plates on which an opinion can be given. Occasionally the 'fizzy' drink produces such distension that the gas-filled stomach overlies both kidneys without the use of compression (see Fig. 4).

This method of excretory pyelography is simple and effective and is acceptable to children. With its use it is very seldom necessary to resort to retrograde pyelography. It has proved to be an invaluable aid in renal diagnosis in children, especially if combined with tomography.

SUMMARY

Generally speaking excretory pyelography by the usual method gives such poor results in young children that

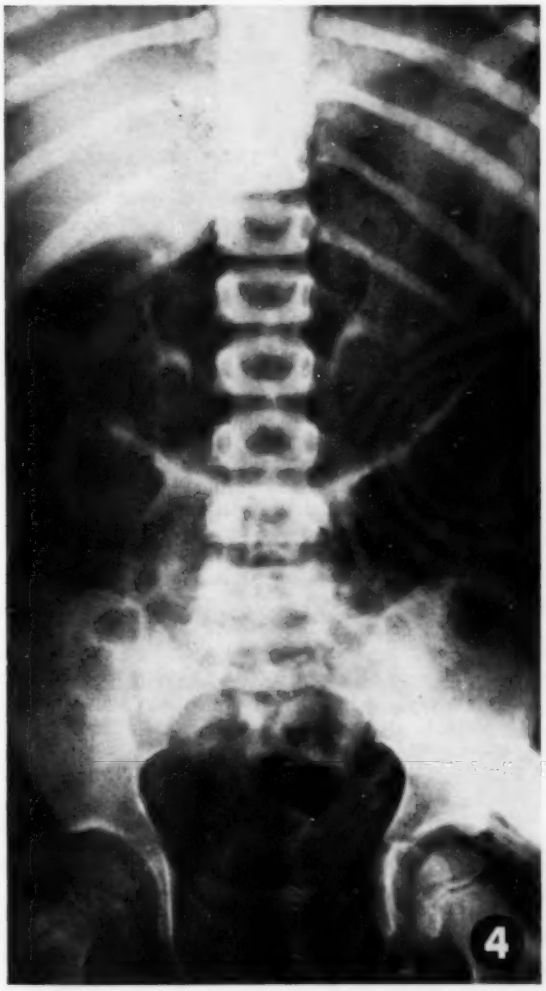

Fig. 4. Demonstrates that occasionally gastric air distension is so great that it overlies both kidneys. It is not necessary to cause gastric distortion in this case.

it is very often necessary to repeat the pyelogram or resort to retrograde pyelography. A modification of Christiansen's method is described whereby better visualization is obtained and resort to retrograde pyelography usually rendered unnecessary.

OPSOMMING

'n Metode van uitskeidende urografie word beskryf as eenvoudig, doeltreffend en aanneemlik vir kinders.

Oor die algemeen gesproke gee uitskeidende pyelografie deur die gewone metode sulke swak resultate by jong kinders dat die pyelografie herhaal moet word of die toevlug na 'n retrograde pyelografie geneem moet word.

'n Gewysigde metode van Christiansen word beskryf waardeur beter voorstelling verkry word en die toevlug na retrograde pyelogram gewoonlik onnodig is.

Hierdie metode het bewys gelewer van groot waarde te wees en nierdiagnose in kinders, vernaam as dit verbind word met tomografie.

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A NEW TOXIC MUSHROOM

Lepista caffrorum (Kalchbr. and MacOwan Singer)

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Investigations into the toxicity of this mushroom were undertaken because the tasting of a small portion of it induced symptoms of poisoning, although other persons had eaten the same species of mushroom with impunity.

Both the latent period which elapsed between the time the mushroom was tasted and the time the symptoms appeared, and the symptoms themselves, resembled those seen in cases of poisoning with *Amanita phalloides:* the patient (an adult European female) took ill approximately 24 hours after tasting the mushroom and the symptoms were headache, giddiness and colic.

The mushroom is usually found growing in grassy places and often in large circles.

EXPERIMENTS

The material used was collected in the Botanical Reserve of the Pretoria University Experimental Farm. This mushroom is also known to occur in the vacinity of the Rietvlei Dam near Pretoria.

The fresh material was minced and administered to 2 rabbits by means of a stomach-tube:

Rabbit A (3·0 *kg.*) received 20·0 g. twice daily on 10 and 11 February 1954, and 60·0 g. in two doses on 12 February 1954. On 11 and 12 February the animal showed progressive listlessness and loss of appetite, and died on the morning of 13 February. *Autopsy:* Conjunctivae purplish; kidneys, pleurae and peritoneum cherry-red in colour; heart in diastole and all chambers distended with blackish clotted blood; congestion and oedema of the lungs; a few petechiae beneath the capsule of the kidney; liver markedly swollen, soft and friable, and light-grey in colour; gastric mucous membrane light-red in colour; contents of the large intestine normal in consistence.

Rabbit B (3·0 *kg.*) received 30·0 g. twice daily on 10 and 11 February 1954. Within 4 hours after the first dose the animal showed increasing restlessness. Next day (11 February) it ate nothing and exhibited marked salivation, myosis, and diarrhoea, and it died early on 12 February. *Autopsy:* Visible mucous membranes light-red in colour; congestion and oedema of the lungs; liver, kidneys, pleurae and peritoneum cherry-red in colour; liver slightly soft in consistence and normal in size; contents of entire gastro-intestinal tract very liquid in consistency.

DISCUSSION

It is interesting to note that the rabbit which received the smaller amount of the mushroom exhibited symptoms and post-mortem appearances resembling those seen in poisoning with *Amanita phalloides* ('Death Cap'), while the other rabbit, which received the larger amount, presented a train of symptoms and post-mortem appearances very much resembling those seen in poisoning with *Amanita muscaria* ('Fly Agaric').

It is possible that if the person who had tasted the mushroom and been poisoned, had eaten a larger quantity she would also have exhibited symptoms characteristic of stimulation of the parasympathetic nervous system such as occurs in *Amanita muscaria* poisoning. It appears possible that the *Lepista caffrorum* mushrooms investigated contained active principles similar to, or identical with, those found in *Amanita phalloides* and *Amanita muscaria.*

The fact that this mushroom has been eaten without ill effects can be attributed to that well-known phenomenon, viz. variation in the toxicity of plants, which depends on various factors such as stage of growth, type of soil and climatic conditions.

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LEAD EDTA COMPLEX

FURTHER RADIOGRAPHIC STUDIES

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The value of the lead complex of ethylenediamine tetraacetic acid (lead EDTA) as a water-soluble contrast medium for oral and parenteral administration has been experimentally demonstrated.[1] Dense shadows were obtained with the aqueous solution given by mouth; they were more homogeneous and persistent than with those produced by emulsion of barium sulphate, and extended very rapidly along the intestinal tract. After subcutaneous injection in rats the kidneys and with greater density the renal pelves, ureters, bladder and urethra were well demonstrated in radiographs.

The rapid passage of the aqueous solution along the alimentary canal suggested an investigation of preparations of the radiopaque medium that would travel more slowly for special purposes in diagnostic radiography. The possibility has also been investigated of obtaining denser shadows in the urinary system with the aqueous solution given intravenously (in smaller doses than used subcutaneously) in comparison with the organic iodine compound diodone. These two investigations are reported in the present communication.

METHODS

Lead EDTA in 25% and 50% solution, pH 8.0, was used in the experiments. The animals were anaesthetized with pentobarbitone sodium injected intraperitoneally.

Oral administration. The contrast medium was administered through a stomach tube to adult albino rats which had been deprived of food for the previous 24 hours. It was given in aqueous solution as a basis for comparison (control) as was standard emulsion of barium sulphate. Different vehicles were prepared to delay the passage of the contrast medium by absorption, viscosity or other physical property. Thus a buff-coloured preparation of creamy consistency was made by incorporating lead EDTA *powder* in bentonite magma 15%; bentonite, a native colloidal hydrated aluminium silicate, was added to distilled water without shaking and allowed to stand many hours before shaking to form a thick smooth cream, to which the contrast medium was then added, 1 g. lead EDTA complex to every 2 ml. bentonite magma. Another type of preparation was made by incorporating a *solution* of the contrast medium in methylcellulose mucilage; methylcellulose 20% in distilled water was allowed to stand a few days to form a very viscous medium with which the lead complex solution was then mixed, 1 ml. 50% solution to every 1 g. methylcellulose mucilage. Methylcellulose preparations of different degrees of viscosity can be made to serve as the vehicle.

The amount of the various preparations given to each rat was 0.5 ml. Groups of animals (weight 180 to 220 g.) were studied; in each group all the animals received their dose within a few minutes from syringes with stomach tube attachment ready loaded for administration. Light anaesthesia was subsequently induced so that the animals could be placed on their backs for radiography.

Intravenous injection. In anaesthetized rats the right femoral vein was exposed. The lead complex in 25% and 50% aqueous solution was administered in doses of 1—2 ml. per kg. to different animals and the organic iodine preparation Injection of Diodone 50% was given to other animals in corresponding doses at the same time and in the same manner for comparison of their urographic properties. In anaesthetized cats injection was made into the femoral vein, 0.5—1ml. 50% solution per kg. body weight.

RESULTS

After administration of the aqueous solution of lead EDTA by mouth to starved rats a dense shadow of the stomach was produced, and with its rapid flow the small intestine was demonstrable within 15 minutes; good homogeneous gastro-intestinal shadows then became available on single films for several hours. The stomach shadow then disappeared but radiopaque material still showed in the large intestine until about 24 hours after administration of the solution.

The viscous preparations of the contrast medium passed more slowly into the intestine and consequently the stomach shadow remained dense for a longer time

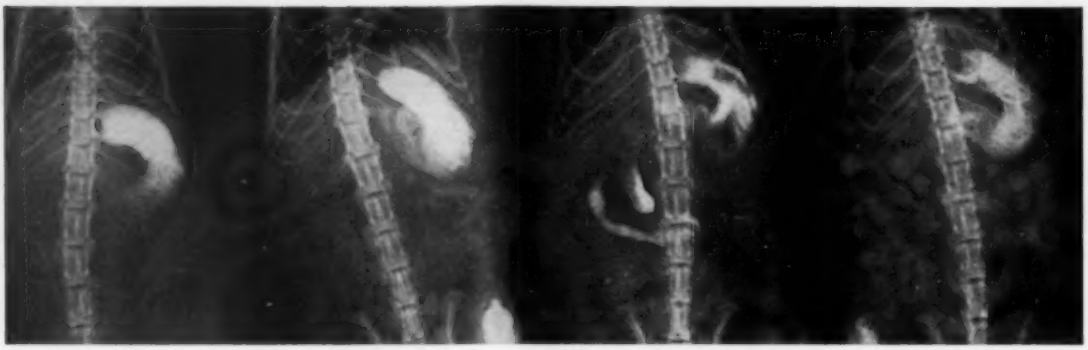

Fig. 1. Radiograph to illustrate the relative density of contrast medium in the stomach and its passage along the intestine, at one hour after administration; left to right (*a*) lead EDTA complex 25% in methylcellulose mucilage, (*b*) lead complex 50 % in bentonite magma, (*c*) emulsion of barium sulphate, (*d*) lead EDTA complex 50% in water.

than with the plain solution. The bentonite preparation with its high content (50%) of lead complex gave a particularly persistent dense shadow in the stomach; bentonite magma itself produced no shadow. The methylcellulose preparation also remained in the stomach for a long time, giving a good shadow, not so dense as the other preparations because of its lower content (25%) of lead complex. The emulsion of barium sulphate did not give such a uniform shadow of the stomach; it entered the intestine rapidly but irregularly, moving relatively slowly onward and producing shadows that were not homogeneous.

After *intravenous injection* of solution of lead EDTA to rats the urinary system was quickly and clearly demonstrated on radiographs. When 0.5 ml. 25% solution was administered a good shadow of the renal pelves appeared within 15 minutes. When 0.5 ml. 50% solution was given dense shadows of the pelves, ureters, and the bladder resulted, and presented a striking picture with the less dense but definite shadows of the bodies of the kidneys; urographs were made within 5—15 minutes and were still obtainable after several hours. The organic iodine compound also given in doses of 0.5 ml. produced shadows of similar density, with similar rapidity of onset and persistence for some hours.

Intravenous injection of the lead complex in cats produced shadows of the kidneys and the renal pelves when 0.5 ml. per kg. body weight was given, with little change in blood pressure or respiration. A transitory fall of blood pressure with some increase in the depth of respiration occurred during the injection when 1 ml. per kg. body weight was given; the lowering of the blood

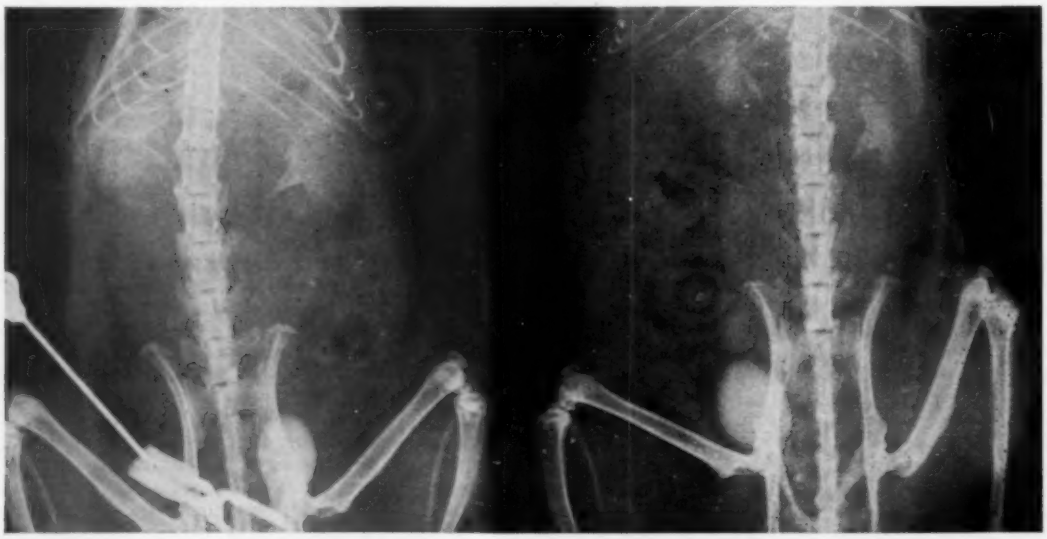

Fig. 2. Radiograph to illustrate intravenous urography in the rat, 30 minutes after injection of lead EDTA 50% solution (*left*), injection of diodone 50% (*right*).

pressure is due to transitory depression of myocardial contractions, and electrocardiographic records suggest a temporarily altered electrolyte balance (potassium effect). No stimulation of intestinal or uterine movements was observed in experiments performed on the intact cat or on isolated rabbit tissue; large doses injected subcutaneously in pregnant rats did not produce abortion.

DISCUSSION

The water-soluble stable chelated compound lead ethylenediamine tetraacetic acid (lead EDTA complex) was previously shown to have value as a contrast medium. By mouth it produces a homogeneous shadow of the entire gastro-intestinal tract (in the rat), clearly visualized on a single film.[1] Being miscible with the intestinal fluids it will presumably produce in larger animals and in man a mucosal pattern of fine detail. The rapid passage of the aqueous solution may not be suitable for radiographic demonstration and diagnosis in certain circumstances. For investigation of the oesophagus and the upper gastro-intestinal tract and the slower passage of contrast medium through these parts the viscous preparations of the contrast medium in bentonite magma and in methylcellulose mucilage would appear to provide the type of consistency needed. Both bentonite and methylcellulose are administered orally to man for other purposes, the former as a suspending agent in chalk mixtures, the latter as a purgative. Apart from the aqueous solution of the lead complex the viscid preparations, or a combination of them, suitably flavoured, deserve study. If they are tolerated they may prove suitable radiopaque media for investigation of the alimentary canal not only by oral administration but also by introduction into the rectum. The intestine (and the uterus) were not stimulated in animals by high concentrations.

Although barium sulphate has been widely used for these purposes it is not regarded as entirely satisfactory. The usual suspension in water is liable to flocculate or precipitate, or inspissate in the intestine, so that stable colloidal suspensions have been made having varying degrees of viscosity.[2] Others have sought a medium in which barium remains in finer suspension to facilitate diagnosis of smaller lesions of the gastro-intestinal tract; barium in methylcellulose suspension was found to produce a mucosal pattern of fine detail.[3] The large amount of barium suspension introduced routinely into the rectum for radiological examination may mask or distort a rectal lesion or produce undue distension; this led certain workers to devise a thin mist of barium water suspension to coat the mucosa of the rectum and the sigmoid colon.[4] The solubility of lead EDTA complex should enable the solution and viscous preparations of all degrees of mobility to come in close contact with mucosal surfaces.

The subcutaneous injection of solution of lead complex was previously shown experimentally to be a suitable route of administration for radiographic studies of the kidneys and urinary tract in certain laboratory animals.[1]

Intravenous injection of the contrast medium produced shadows of marked density. Less solution was required than with subcutaneous injection and the shadows appeared within a shorter period. Slow injection is needed especially if the 50% concentration is given in large doses because of the transitory lowering of the blood pressure that is produced. The blood pressure returns rapidly to normal even with repeated doses. The effect of large doses of the complex on the myocardium may be due to its affinity for calcium ions affecting adenosinetriphosphatase activity in the muscle.[5] Electrocardiographic studies in cats in the present investigation showed increase in the T waves (potassium effect). Possibly a lead-calcium EDTA complex may not have this effect. EDTA itself did not produce this action in the normal cat, but in the severely digitalized animal the irregular auricular and ventricular contractions and the fluctuating blood pressure could be temporarily restored to normal, presumably through an action on calcium-ion relations.[6] The complexes may alter the intracellular content of electrolytes without change in the serum concentration of salts.

In man smaller doses of lead EDTA complex may be adequate, e.g. for urography, than those used in the lower animals; the dose 0.5 ml. 50% per kg. which produces pyelograms in cats (this is 30 ml. for average adult man) is not very much in excess of the full dose of organic iodine compound used in man. The organic iodine compounds used for radiography in man also require to be given carefully when high concentrations are injected. The disadvantages of the iodine compounds are well known and were referred to in the previous article[1]. Lead EDTA may prove more satisfactory for certain radiographic purposes in man. The lead EDTA complex is excreted without harm to the patients in cases of acute and chronic lead poisoning in which calcium EDTA has been given by injection as the antidote.

SUMMARY

Lead EDTA complex in aqueous solution produces a good homogeneous shadow of the stomach and extends rapidly along the intestine so that the entire gastro-intestinal tract becomes clearly visualized on a single film. Slower passage of the contrast medium is achieved by incorporating it in bentonite magma or methylcellulose mucilage; such preparations, possibly combined for better tolerance by the stomach and intestines, may have special value for radiographic investigation of the upper part of the alimentary canal. The various preparations should be of value orally or rectally for studying slowly-moving or rapidly-extending shadows and for demonstration of finer detail of the mucosal pattern.

Intravenous injection of the lead complex produces striking pictures of the urinary system, the calyces, pelves, ureters and bladder being characterized by greater radiodensity than the kidneys themselves. As compared with subcutaneous injection a smaller dose is adequate but careful administration is necessary if large doses—1 ml. per kg. of concentrated solution (50%)—are injected experimentally as they produce a transitory fall of blood pressure due presumably to intracellular alterations in the calcium-potassium electrolyte ratio. Smaller doses are adequate; e.g. 0.5 ml. per kg. produced shadows of the kidneys and the renal pelves in cats;

this represents a dose of approximately 30 ml. for adult man, in whom possibly less may prove useful.

The lead complex used in this investigation was obtained as 'Sequestrol-lead complex (NA2)' from The Geigy Company Limited, Rhodes, Middleton, Manchester, to whom my thanks are due. The methylcellulose used was Tylose SL400 (Kalle & Co., Wiesbaden, Germany). My thanks are due to Mr. J. W. Bates for his assistance with the experiments.

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ANAESTHESIA FOR MITRAL VALVOTOMY*

F. W. ROBERTS M.R.C.S. (Eng.) L.R.C.P. (Lond.) D.A.,R.C.P. & S. (Eng.) MB,BS

The possibility of surgical dilatation of the rheumatically stenosed mitral valve was first seriously suggested by Sir Lauder Brunton [1] in 1902, but the first surgeon to attempt the operation was Cutler [2] in 1923, while Souttar [3] reported the first successful case in 1925. It was not, however, until 1948, after the firm establishment of modern methods of anaesthesia for thoracic surgery, that Brock [4] reported a series of cases and the operation became accepted as a reasonable surgical risk and so led to the present state of affairs where mitral valvotomy is performed daily in thoracic surgical clinics all over the world.

While I do not entirely agree with the assertion in the *Journal* [5] recently that 'the anaesthesia for valvotomy does not present any great problem', it is at any rate a compliment to the high standard of anaesthesia available in South Africa, and a further indication that it is not only the lay public that accept as commonplace a degree of skill which only a few years ago would have been attributed only to a genius.

During the past 6 years remarkably few anaesthetists have published their experiences in this operation and summarized their methods of anaesthesia; a review of the articles that have been written shows two points common to all the reported methods: light anaesthesia is recognized as extremely important to avoid the hypotension resulting from deep anaesthesia, and a very plentiful supply of oxygen is essential.

Keown and his associates [6] after premedication with nembutal, pethidine and atropine started a procaine drip and, with Eulissin and minimal thipentone for intubation, maintained unconsciousness with 50% nitrous oxide and oxygen, adding pentothal as required and using 100% oxygen during the intracardiac manipulations.

Pender [7] omits atropine in the premedication, for fear of tachycardia; he adopts the attitude that as all anaesthetic agents are poisons the less used in number or quantity the better, and employs only nitrous oxide—oxygen and ether, deepening the anaesthesia only to allow intubation to be performed without the aid of any relaxant. He never has had to use procaine either prophylactically or therapeutically, and places his trust in a high concentration of oxygen to prevent arrhythmias. Any cardiac irregularity that does develop he believes is best treated by temporarily stopping the surgical stimulus.

Lief [8] again has stressed the importance of adequate preoperative sedation, light anaesthesia with carbon dioxide absorption, and adequate oxygenation. If arrhythmias do not respond to stopping the surgical stimulus, he employs procaine amide.

Parry Brown and Sellick [9] after premedication with omnopon and scopolamine induce with 1½ times the sleep dose of thiopentone given slowly to avoid hypotension; intubation is facilitated by topical cocaine and intravenous tubocurarine. They use a separate 1% procaine drip run into the side of the fluid replacement drip as near the vein as possible, so that the amount of procaine given can be varied independently of the dextrose, saline or blood. They attach a special importance to the part played by procaine in their anaesthetic technique, believing that it has 4 useful functions: (1) it reduces the irritability of cardiac muscle, (2) the central and possibly peripheral analgesic action supplement the nitrous oxide anaesthesia, (3) it prevents bronchospasm, and (4) it causes vasodilatation and so allows the drips to run freely.

In an article by Adler and Fuller [10] Frost describes his anaesthetic technique. He uses seconal, omnopon and atropin for premedication, induces with pentothal and tubarine, and uses nitrous oxide and oxygen supplemented with penthidine and pentothal. During the intracardiac phase pure oxygen is given and prostigmin is not given routinely.

AUTHOR'S SERIES

In my series of cases the anaesthetic technique was based originally on what I believe to be sound basic physiological principles, and has been modified slightly from time to time in the light of various experiences. As for any intrathoracic operation, controlled respiration is indicated, with added precautions against serious arrhythmias or cardiac arrest resulting from the direct surgical stimulus.

Premedication. Any patient about to undergo a heart operation is naturally even more apprehensive than most candidates for surgery, and sedation should be adequate to allay their fears without unduly depressing respiration: a barbiturate hypnotic given the night before and, unless the operation is timed for early in the morning, repeated 3 or 4 hours before the operation.

* A paper presented at the South African Medical Congress, Port Elizabeth, June 1954.

Omnopon gr. 1/3 and scopolamine gr. 1/150 has been used as a routine 1½ hours before the operation.

Notwithstanding Pender's fears, atropin in normal therapeutic doses (in the adult gr. 1/100—1/75) rarely causes tachycardia when combined with adequate sedation and I have no hesitation in using it if for any reason scopolamine is contra-indicated.

Induction. Ideally this is carried out intravenously in the patient's bed, and the most useful drug is hexobarbitone—the old evipan or one of its synonyms. Unfortunately, this drug is no longer available in South Africa, and I do not care to use the shorter-acting and more respiratory-depressant thiopentone in the bedroom; so that in practice now I induce in the theatre with pentothal.

A maximum of 0.5 g. pentothal is given slowly, until twice the amount required to produce unconsciousness has been given. Succinylcholine chloride, 0.5 mg. per lb. body-weight roughly estimated, is now given and the patient receives pure oxygen by the face mask of the anaesthetic apparatus. When the patient is apnoeic, the lungs are flooded with oxygen by a few squeezes of the rebreathing bag. The cords are sprayed with amethocaine 2% and an oral cuffed endotracheal tube, lubricated with 1% amethocaine ointment, is introduced under direct vision and secured in position.

The patient is now turned into the desired position for the operation and 3 litres of nitrous oxide and 2 litres of oxygen are given by controlled respiration until spontaneous respiration is resumed.

Intravenous fluids. A drip of 5% dextrose in water with 2 g. of procaine to the litre (0.2%) is administered throughout. Blood is at hand but only given to replace any loss. It may be an advantage to keep the tubing and needle of the blood-giving set sterile so that in an emergency the surgeon may place the needle in the aorta. I have on several occasions been convinced of the efficacy of intra-aortic transfusion in rapidly restoring the function of a failing heart. Even if no blood under pressure is at hand, when the left hemithorax is open mere compression with the finger of the aorta just beyond the arch will so increase the pressure in the coronaries and the carotids that apparently imminent death may be averted.

Maintenance of Anaesthesia. It is very rarely necessary to give further thiopentone, the only indication being the failure of the following technique to secure immobility:

As soon as the patient is settled in the desired position pethidine 30—50 mg. is injected into the drip. Thereafter maintenance doses of 15—25 mg. of pethidine are given at intervals of roughly ½ hour.

Unless the patient bucks, no more relaxant is given until the chest is about to be opened and until such time as the patient breathes spontaneously (with perhaps a little assistance by manual pressure on the rebreathing bag during inspiration if a good colour is not maintained).

Relaxant. Flaxedil has been tried but abandoned for this operation for fear of causing tachycardia, more perhaps on theoretical than practical grounds. Laudolissin was found to have too slow an onset of action to be easily manageable, because even if it is given as soon as the scoline apnoea is over, a patient with an irritable larynx may buck for 5 minutes before the laudolissin works. Repeated small doses of succinylcholine chloride have been most satisfactory, and the thought of not having to give intravenous atropin and prostigmine to a cardiac patient is attractive. But there have been several cases in this series with a somewhat delayed return of spontaneous respiration and the reports of very prolonged apnoea from other workers have dissuaded me from continuing to use this otherwise excellent relaxant in these cases.

At present I am using d-tubocurarine chloride. A small dose 6—9 mg. may be given as soon as the original scoline apnoea is over, and this will materially assist in preventing bucking, but will allow spontaneous respiration until just before the chest is opened, when a further suitable dose will result in the necessary apnoea. From then until after the chest is closed, controlled respiration is performed with to-and-fro CO_2 absorption with a Waters canister.

Prevention of Reflex Cardiac Disturbances. In spite of some assertions to the contrary, I believe that procaine does damp down the irritability of the heart and should therefore be given routinely. I prefer not to give any blood during the operation (unless it is called for to replace haemorrhage) so as not to interrupt the prophylactic procaine.

If the heart seems irritable, and especially if the electrocardiograph shows ventricular extra-systoles on opening the pericardium, 3 ml. of 2% procaine is injected into the drip near the vein and the surgeon is requested to pause to allow it to take effect. A similar dose of procaine is given before clamping the appendage, and again before the actual digital commisurotomy if thought to be indicated. Pronestyl (procaine amide) has been used in several cases, the usual dose being 250 mg., but does not appear in this small series to have been clinically superior to procaine 2%.

Following a suggestion by Le Brigand [11] that subhypotensive doses of hexamethonium would help by ensuring coronary dilatation, a number of cases were given 10 mg. of hexamethonium bromide. None of these cases gave any cause for anxiety but the number is too small to be of any significance.

As soon as the chest is closed the absorber is removed and, unless succinylcholine has been the relaxant employed, atropine gr. 1/100—1/50 followed 5 minutes later by prostigmine 1 mg. is injected intravenously to counteract the curare, flaxedil or laudolissin. Prostigmine 1 mg. is repeated at 5-minute intervals until the respiration is adequate. Only on one occasion has more than 3 mg. of prostigmine been necessary (4½ mg.) and frequently much less than 3 mg.

The majority of patients are sufficiently awake at the end of the operation to open their eyes in response to a request to do so; a few actually talk and even thank the doctors.

Oxygen is given routinely by B.L.B. mask during transport from the theatre to the ward.

Gross Cardiac Disturbances. In spite of the above preventative measures, 6 patients out of the 50 in the series gave cause for sudden alarm:

Case 1. A man of 48. At the moment of splitting a sudden give was felt by the surgeon suggesting a torn chorda tendinea. The heart swelled visibly and slowed to a stop. Massage was difficult until the incision in the appendage was closed. The heart started to beat on several occasions but quickly relapsed into ventricular fibrillation and stopped again. Resuscitative measures for an hour failed to save his life.

Case 2. A woman aged 37, at the end of the operation, in spite of only a small dose of relaxant, failed to start breathing again normally. The electrocardiograph showed a low voltage and adrenalin 0.5 ml. was injected intravenously at the suggestion of the physician. This immediately caused ventricular tachycardia, going on to flutter, ventricular fibrillation and cardiac arrest. The chest was rapidly reopened and direct cardiac massage resulted in spontaneous heart beat and respiration. This patient was kept in the theatre 3 hours after the heart had restarted and the endotracheal tube was left in situ till next morning. She was spastic for 3 days, like a vegetable for 3 weeks, and then suddenly one day completely recovered her mental faculties, having, if anything, a more pleasant personality than before. She had apparently suffered an anoxic leucotomy.

Case 3. A woman aged 43, with gross mitral regurgitation. An attempt was made to reconstruct a mitral valve with a flap of pericardium pulled through the ventricular wall. During this manoeuvre the heart became slow and feeble. Intracardiac aminophyllin improved the cardiac action and she gave no more cause for anxiety during the operation.

Case 4. A woman aged 37. Immediately after the digital mitral split the electrocardiograph reported gross irregularity. Haemorrhage from the auricle complicated the picture and the patient became very cyanosed as the ventricles were seen to dilate. The electrocardiograph showed ventricular fibrillation. Cardiac massage was instituted and various drugs injected. For 40 minutes there was no apparent circulation and the patient was very cyanosed. Then, on the injection of quinine into the left ventricle, the ventricular fibrillation gave way immediately to cardiac arrest. Cardiac massage then for the first time produced an efficient artificial circulation and the colour improved. After a further seven minutes spontaneous regular rhythm started, and spontaneous respiration at the end of the operation. The patient was returned to the ward with the endotracheal tube in position. After four hours it was removed and she was conscious and talking. She was remarkably fit the next day, showing no sign of cerebral damage, and the heart was beating well and regularly, but the following day she had several syncopal attacks and 50 hours after returning to bed died suddenly in such an attack.

Case 5. A man of 34. Immediately after the digital split the heart rate became very rapid and beat very feeble, progressing practically to a standstill. Intravenous and intracardiac aminophyllin restored the spontaneous circulation in 10 minutes. Tachycardia was treated successfully by intravenous 2% procaine and the man made an uninterrupted recovery. Electrocardiograms were not available during this case but the condition was almost certainly ventricular fibrillation.

Case 6. A woman of 47, with auricular fibrillation and clots in the auricle. During the digital splitting of the mitral valve the surgeon requested that the carotids be compressed to obviate cerebral embolism. As the carotids were pressed the heart was seen to slow and stop in diastole. Release of the pressure on the carotid sinus resulted in immediate restarting of the heartbeat. The woman left the table conscious and had a normal convalescence.

These emergencies show firstly that an electrocardiogram is a help in giving early warning of an irritable heart, calling for more procaine, and in demonstrating the nature of the cardiac disturbance and thereby indicating the type of treatment.

Cardiac massage is often useless with a fibrillating ventricle. Complete arrest must be achieved either as in one case by drugs or preferably by an electrical defibrillator, which should always be at hand during any cardiac surgery. Beck and Kim [12] and Kushner and Adelman [13] recommend an alternating current—60 cycle, 110 volts, 1.5 amps—for one or two seconds. Complete cardiac arrest either spontaneous or induced with the defibrillator is then treated by cardiac massage to produce a controlled circulation. Restoration of the coronary flow will often then result in spontaneous resumption of normal rhythm.

SUMMARY

Anaesthesia for mitral valvotomy adds the hazard of direct surgical cardiac stimulus to the well-known problem of the open thorax. Controlled respiration is indicated while the chest is open, and anaesthesia should be maintained at a very light level with adequate oxygenation. Pentothal, nitrous oxide, pethidine, procaine and tubocurarine provide ideal conditions for the surgery. Electrocardiography during operation is advisable and the presence of a defibrillator ready at hand is essential.

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ASSOCIATION NEWS : VERENIGINGSNUUS

MEETING OF THE CAPE MIDLAND BRANCH

A clinical meeting of the Cape Midland Branch of the Medical Association was held on Thursday 14 October in the Nurses' Home, Port Elizabeth.

Naegele's Pelvis with Congenital Renal Deformity. Dr. James Miller presented an obstetric case that was discussed 2 months previously. The patient showed no abnormality of gait or stature. Pregnancy had been terminated by lower segment Caesarian section for fulminating toxaemia superimposed on an albuminuria presumably due to congenital abnormality of the renal tract.

Pre-operatively a congenital abnormality of the pelvis and a crossed ectopia of the kidney was diagnosed. Now further investigations had revealed that the pelvic condition was a typical Naegele's pelvis with high sacrilization of the fifth lumbar vertebra and a spina bifida occulta. A retrograde pyelogram showed that while the left kidney was normal and in normal position, the right kidney had descended after the evacuation of the uterus from the left-hand side opposite the first and second lumbar vertebrae to the midline at the level of the fifth lumbar vertebra. Mr. W. F. de Villiers felt that the renal condition was one of ectopic right kidney with a long pedicle and although an intravenous pyelogram showed the right kidney to be non-functioning, the excellent present general condition of the patient did not warrant any interference at present.

The infant had survived the prematurity and was now thriving.

Dr. Miller said that he had found no reference to the above-mentioned associated developmental conditions in the literature and wondered whether they constituted a new syndrome.

Gallstone Ileus: A case presented by Mr. J. M. Hoffman. Mrs. M.V., a European female aged 63 years, was referred from a country town with a history that since March 1954 she had suffered the following in sequence: typhoid fever, pneumonia, a fractured clavicle and a large abscess in the buttock secondary to an injection. During August 1954 she had 3 attacks of high fever associated with vomiting and diarrhoea at weekly intervals. A blood smear taken on 10 September showed the spirochaetes of relapsing fever. On 12 September she was prostrated by a massive haematemesis associated with the passage of a large stool consisting almost entirely of blood. This was followed by persistent vomiting of bile-stained fluid, and she still passed some flatus and faeces. There was no abdominal distension and no pain. On 17 September a barium meal was performed, and on 23 September she was removed to Port Elizabeth under his care, still vomiting.

On examination, the patient proved to be an obese female in a state of severe oligaemia due to water and salt loss; for the rest, the clinical examination was essentially negative. The X-ray films (demonstrated to the meeting) showed a rather smooth-surfaced filling defect in the duodenum, the size and shape of a hen's egg, with a trickle of barium into a diverticulum at the junction of the first and second parts. Some of the barium had passed the obstruction and filled the proximal coils of the jejunum.

A pre-operative diagnosis of gallstone ileus was made, and after correction of the water and salt balance, a laparotomy was performed on 25 September. The gallstone had passed the duodeno-jejunal flexure, and was found some 6 inches down the jejunum; it had entered the intestine through the anterior wall of the second part of the duodenum where the gallbladder fundus was adherent. The stone had formed a complete cast of the gall-bladder, and measured 2¾" by 1½". The patient made an uneventful recovery.

This case was presented because of the interesting X-ray appearances, the unusually large gallstone and the history of a series of misfortunes followed by the unusual manner in which the onset of the gallstone ileus was heralded by a massive gastro-intestinal haemorrhage. As is usual in these cases, there was no clear history of antecedent gallbladder disease.

Cerebral Gumma presenting as an Intracranial Tumour: a case presented by Dr. P. Botha. A European male aged 54 years, was first seen about 4 months ago in a stuporose state, unable to give a relevant history. His relatives stated that his illness started about 4 months prior to admission, when mental changes of a progressive nature—such as impairment and later loss of memory, disinterest in his surroundings, and failure to recognize his family and friends—were first noted. Finally he lost control over his sphincters. For 3 weeks prior to admission he had suffered from headaches and persistent vomiting.

On admission, the patient was afebrile and showed relative bradycardia. Bilateral papilloedema was present but no focal neurological signs. Mental disturbance, disorientation and loss of intellectual function, was evident. The blood Wasserman test was positive; cerebrospinal pressure was moderately raised and the fluid showed lymphocytic pleocytosis, raised protein, positive Wasserman reaction, and negative colloidal gold tests. An air encephalogram showed a large mass in the left fronto-parietal region distorting and pushing the ventricular system over to the right.

While transfer to a neurosurgical unit was being arranged, penicillin, 1 million units daily for 15 days, was instituted. A marked change was evident from the fifth day onwards, and on the fourteenth day the patient was allowed up, mentally and intellectually very much improved. Seen again 3 months later, the patient was symptom-free and working on his farm. The blood and cerebrospinal fluid Wasserman tests were still positive, but otherwise the fluid was normal.

The rarity of such a lesion was stressed. It is usually said that a space-occupying lesion in a person who also has a positive Wasserman reaction is still more probably a tumour than a gumma, because both an intracranial neoplasm and a syphilitic infection are common and may be present in the same individual.

Multiple Fractures: a case presented by Dr. H. van der Post, in Mr. L. Mirkin's absence. A young Native male admitted to hospital after a traffic accident was found to have sustained compound fractures of the right tibia and fibula and humerus, simple fractures of both femoral shafts and a simple fracture of the right first metacarpal bone.

It was decided to deal first with the compound fractures and then proceed as far as the anaesthetist would permit. Accordingly, two surgical teams set to work and plated respectively the fractured tibia and the fractured humerus. The patient's condition remaining good, a Kuntscher nail was then inserted in the right femur. (At this stage a blood transfusion was commenced: and the patient's blood pressure remained good—at no stage did it fall below 100 mm. systolic). A Kuntscher nail was therefore inserted into the left femur as well and the fractured metacarpal was reduced and encased in plaster.

Early movements were encouraged: the patient was allowed to sit up in a chair within the first week, and he was walking with the aid of crutches by the third week. At the time of the meeting (within the sixth week), he was walking unaided with a slight limp, with the following range of joint movements:

Straight leg-raising, 90° R and L; hips, full range R and L; knees, R extension full, flexion to 90°; L extention full, flexion to 50°; ankle, R full range; and elbow, R extension and flexion full.

The thumb was still in plaster, as a second manipulation had been required.

ANNUAL MEETING OF R.M.O. GROUP

At the annual general meeting of the Railway Medical Officers Group, held at Port Elizabeth on 23 June Dr. L. O. Vercueil (Chairman of the Group) was in the chair and there was a large and representative gathering of R.M.O.'s from all parts of the country.

The Chairman Dr. Vercueil read his annual report, which was most comprehensive and dealt with every aspect of the Sick Fund activities. The past year has been one of extreme activity and necessitated the most careful and constant supervision of those in charge of our affairs.

The Chairman had travelled the length and breadth of the country with the Commission of Enquiry into the proposed 'open panel' system for R.M.Os. He had constantly kept the interests of the individual R.M.Os in the forefront.

The good relationship with the Sick Fund was maintained, although there were times when it seemed that the boycott of certain appointments by individual groups might cause disharmony. The Executive of the R.M.O. group had kept a careful watch on these developments and it now seemed that the threatened danger had been averted.

The Meeting felt that the R.M.O. Group had the best chance of negotiating successfully on behalf of the various sub-groups and asked for the confidence and co-operation of the individual sub-groups.

The Group is constantly endeavouring to better conditions and emoluments of the R.M.Os and specialists, and hitherto has met with considerable success. The next objective is a uniform capitation fee for all R.M.Os and Federal Council rates for all specialists. With time and patience there is every hope of these objectives being attained in the near future.

The Secretary, Dr. Morris Cohen, then read his annual report and covered the entire field of the year's activities—financial and otherwise. His report was enthusiastically acclaimed.

Votes of thanks were accorded to the Chairman and Secretary for their masterly reports and for the amount of work and time they have put in on behalf of the Group.

Practically every member present spoke on the various items that were raised and no doubt was left as to the interest and activity of the Group.

It was most obvious that all present reposed the fullest confidence in the Chairman and Executive of the Group.

Office Bearers for 1954-55: *Chairman*, Dr. L. O. Vercueil. *Vice-Chairman*, Dr. H. Penn. *Hon. Secretary-Treasurer*, Dr. M. Cohen. *Executive Committee:* The above, with Mr. W. P. Steenkamp (Cape Western), Dr. J. C. Rabie (Cape Midlands), Dr. L. Jaffit (Cape Eastern), Mr. N. Kretzmar (Cape Northern), Dr. H. Grant-Whyte (Natal), Dr. W. H. Herberg (O.F.S.), Dr. E. W. Turton (Western Transvaal), Dr. C. H. H. Coetzee (Eastern Transvaal) and Dr. F. J. Marais (S.W. Africa).

PASSING EVENTS : IN DIE VERBYGAAN

The Next South African Medical Congress will be held in Pretoria from 17 to 23 October 1955.

* * *

Stephen Eisenhammer, F.R.C.S. (Eng.) resumed practice on 3 November after 3 months overseas, during which time he attended his old hospital, St. Marks, London, and was pleased to find that his operation of Internal Anal Sphincterotomy, first published in the *Journal*, is to be described by C. Naunton Morgan in the new edition of Grey Turner's Surgery. It is also in general use at St. Marks.

* * *

Union Department of Health Bulletin. Report for the 7 days ended 21 October 1954.

Plague, Smallpox: Nil.

Typhus Fever. Cape Province: One (1) Native death in the Hlankomo location in the Mount Fletcher district. The case died before laboratory tests could be undertaken.

No further cases have been reported from the Glen Grey and Xalanga districts since the notifications of 23 September 1954. These areas are now regarded as free from infection.

Epidemic Diseases in other Countries:

Plague: Nil.

Cholera in Calcutta (India).

Smallpox in Bombay, Calcutta, Madras (India); Phnom-Penh (Cambodia); Phanthiet, Saigon-Cholon (Viet-Nam).

Typhus Fever: Nil.

* * *

Dr. G. P. Fourie, formerly of Bellville, has recently returned after 4 years' postgraduate study and 1½ years' teaching in Gynaecology and Obstetrics at Columbia University and Union University, New York.

CORRESPONDENCE : BRIEWERUBRIEK

STERILIZATION AND CONTRACEPTION

To the Editor: The views on these subjects expressed by your correspondent,[1] are surely those of an extremist and so of little practical use. These are very human problems and the majority of people in the world today are human beings, not saints.

Having stated that the present-day attitude of society is to enjoy the pleasures of sex as one does an ice cream he goes on to describe 'a great gift' . . . 'Of course it is pleasurable. It also cements two people together. If it did not there would not be a secure home for the offspring'.

Somewhat illogically he goes on to advocate complete abstinence as a means of preventing any further pregnancies. What is going to happen to the 'secure home' if the mutual bond which cements two people together be suddenly discontinued? One need hardly mention the possible frustrations and psychological repercussions from such a cessation of a normal procedure'.

Would your correspondent pursue his ideals to the logical conclusion of 'total prohibition' except for the purpose of procreation?

The answers lie rather in practical experience than in theories based on religious and moral opinions for condemning sterilization. In my own experience of almost half a century, of which the early years were closely associated with a women's hospital, I frequently met with this problem.

Those were the good old days of the 'family doctor' when the profession was not supersaturated with specialists. The doctor was the 'Judge' in the case with the husband and wife as 'assessors'. Not as it seems to be today a 'Trial by Jury' on which, in addition to the G.P. and the husband and wife, sit a specialist or two, a few correspondents to the *Medical Journal* and a few editors of daily papers who appear to have complete liberty to quote opinions expressed in the Medical Journals which, after all, are circulated to the profession for their guidance and not for reference to the public.

One opponent of sterilization seeks to strike a note of horror by calling the removal of the 'tubes' a 'mutilating operation' comparable to the amputation of a limb. Rather a poor analogy!

But what about the mutilation of many women by the process of childbirth? What about hundreds of hard-working women who, from labours difficult or too frequent, suffer injuries which make life a drudgery? With a family of four or five why should she not be freed from the troubles and anxieties of further children?

Is there a more satisfactory operation in surgery than that which restores such a woman to the comfort, health and almost virginal vitality of her former days? Surely, if she wishes it, common sense indicates that at the same operation she should be sterilized and so avoid a possible repetition of her disabilities.

By such her normal marital life is not disturbed. In fact it is enhanced because now the beauty of the act is not marred by the anxiety of a possible pregnancy nor by the unromantic necessity to resort to contraceptives.

This has been my practice for many years and I have never met with a patient who regretted it. On the contrary I have seen dozens of homes made all the happier.

Does your correspondent expect a virile husband who has been accustomed to normal happy marital relations (thoroughly approved so long as the procreation of children was the object), suddenly to cease when he considers his family large enough?

If the doctor sees the modern attitude to the sex act comparable to eating an ice cream, then he has no more hope of achieving his ideal of 'abstinence' than of persuading the British working man to forego his pint of beer. Admittedly times have changed since my early days of practice. The advent of cocktail parties, cabarets and cinemas tends to stimulate the carnal aspect of sex.

The consideration of these, plus the wife who takes a job to provide her with more funds with which to indulge in them to the neglect of her wife-and-mother duties, certainly influences the application of sterilization but, in my opinion should not be allowed to eliminate it altogether.

R. D. Laurie

44 Recreation Street
Mount Pleasant
Port Elizabeth
26 October 1954

1. Golby, H. H. (1944): S. Afr. Med. J., **28**, 919.

The Medical Association of South Africa
Die Mediese Vereniging van Suid-Afrika

AGENCY DEPARTMENT : AGENTSKAP-AFDELING

CAPE TOWN : KAAPSTAD

Posbus 643, Telefoon 2-6177 : P.O. Box 643, Telephone 2-6177
Waalstraat 35 35 Wale Street

PRACTICES FOR SALE : PRAKTYKE TE KOOP

(1457) Goed gevestigde Westelike Provinsie praktyk. Netto inkomste oorskry £3,000 per jaar. Huis beskikbaar. Verband kan gereël word. Volle besonderhede op aanvraag.
(1530) Karoodorp. Eenmanspraktyk sonder opposisie. Gemiddelde inkomste £2,000 p.j. Premie verlang £700. Huis te huur teen £8 p.m. D.S. aanstelling.
(1756) In Oostelike Provinsie-dorp geleë in uitstekende woldistrik. £4,208 Kontant ontvangste jaar eindigende Junie 1954. Net een ander geneesheer. Koopprys van £1,375 sluit in geneesmiddels, instrumente en apteekmeublement. Betaling kan in paaiemente geskied
(1757) Eastern Province Seaport. Half share in excellent practice to gentile purchaser. Knowledge of Afrikaans essential. Fullest details on application.
(1791) Well-established practice in small attractive Eastern Cape Coastal Town. D.S. appointment available. Gross income with D.S. £3,000 p.a. £1,000 for goodwill, drugs, instruments and office furniture. Terms available. Rebate for quick cash sale. Excellent scope for expansion.
(1794) Vennootskapsaandeel in Karoopraktyk. Ontvangste + £4—5,000 per jaar. Koopprys in halwe aandeel in praktyk, geneesmiddels en sommige instrumente £1,700. Betaling kan gereël word. Korting vir kontant. Klein hospitaal beskikbaar.

ASSISTANTS/LOCUMS REQUIRED
ASSISTENTE/PLAASVERVANGERS VERLANG

DAAR IS 'N DRINGENDE BEHOEFTE VIR ASSISTENTE EN PLAASVERVANGERS IN PLATTELANDSE EN STEDELIKE GEBIEDE. BESONDERHEDE OP AANVRAAG.

REGISTERED RADIOLOGIST

(1793) Bilingual radiologist, man or woman, required for inland centre: (*a*) as locum either for month December or January. Salary £200–£250 per month depending on experience. (*b*) as assistant with view to partnership. Terms to be arranged. Details supplied on application.

FOR SALE : TE KOOP

(1513) Spreekkamermeubels, geneesmiddels en instrumente.
(772) Strand. Instrument cabinet.

* * *

DURBAN

112 Medical Centre, Field Street. Telephone 2-4049

PRACTICES FOR SALE

(PD28) Durban. General practice, also non-European surgery. Owing to ill-health owner wishes to sell as soon as possible. Premium £1,750. House for sale £8,000.
(PD30) Durban. Old-established good class, mainly European practice. Premium £3,000. Owner intends specializing.
(PD31) Natal Inland. Unopposed prescribing practice, mainly Native. Monthly cash receipts average £450. Premium required £2,500 includes surgery, furniture and instruments. House for sale. All sporting facilities.
(PD32) Northern Natal. Well established general mixed practice of 20 years standing. M.O.H. and D.S. appointments. All hospital facilities. Premium £1,500 including surgery furniture and drugs. House £12 per month. For immediate sale.

LOCUMS REQUIRED

(SV5) Locum for January. £3 3s. per day plus board and lodging. £10 car allowance and petrol. Natal Hospital town. Travelling allowance to and from practice for reasonable distance.
(LD6) Natal. From 8 to 23 January 1955. Mainly non-European dispensing with mine Hospital appointment. Own car necessary. £3 3s. per day, all found.

ASSISTANT REQUIRED

(NC5) Assistant required in general practice, country practice. 75% non-European. No surgery or midwifery undertaken. Very little night work. Commence December 1954. Salary £1,200 p.a. ½-hour drive from Durban.

* * *

JOHANNESBURG

Medical House, 5 Esselen Street. Telephones: 44-9134, 44-0817
Mediese Huis, Esselenstraat 5. Telefone: 44-9134, 44-0817
Tel. Add.: 'Serpent'

PRACTICES AND PARTNERSHIPS OFFERED
PRAKTYKE EN VENNOOTSKAPPE AANGEBIED

(Pr-S154) Transvaalse dorp, binne maklike bereik van Johannesburg. 'n Assistent met oog op vennootskap word verlang vir 'n goedgevestigde praktyk, wat steeds uitbrei. Goeie aanvangsalaris plus kommissie sal betaal word. Chirurgie word gedoen en iemand met kennis daarvan, sal voorkeur geniet.
(Pr-S153) 'n Vennootskap word aangebied in 'n groot Transvaalse dorp, met groot hospitaal. Hoewel hierdie praktyk oud-gevestig is, brei dit tans nog uit, en kan die eienaar nie al die werk behartig nie. Geen aanstellings word gehou. Alle chirurgie word gedoen en iemand, met nie minder dan ongeveer ses jaar ondervinding, word verkies. Vir iemand wat 'n verplasing na 'n groot dorp, met goeie hospitaal en groot skole, wil maak, is dit 'n goeie geleentheid.
(Pr-S148) Northern Rhodesia. An exceptionally well-organized, high class practice in a large hospital town. Actual cash takings £3,500/£4,000 p.a. Expenses are approximately £750 p.a. Will suit Doctor with surgery and/or gynaecology as background. Practically no country travelling is done. Premium: £1,500 for goodwill, introduction and equipment. Terms could be arranged. In case of an outright sale, an introduction of about 6 months will be given. This doctor also requires a locum to start as soon as possible, and if suitable as Assistantship/Partnership will be offered, with view to succession.
(Pr-S151) Transvaal. 'n Ongeopponeerde praktyk, met twee oordraagbare aanstellings. Die netto inkomste oorskry £2,500 per jaar. Die eienaar is reeds die afgelope 8 jaar in besit van hierdie praktyk. Die werk is nie veeleisend nie, en min nagwerk word gedoen. Huis te huur vir getroude persoon. Die premie is £1,000 en sluit medisyne voorraad en instrumente in. Beste terme denkbaar sal gereël word.
(Pr-S149) Pretoria. Goedgevestigde praktyk met oordraagbare aanstellings van £125 per maand. Privaat praktyk bring 'n verdere £175/£200 p.m. in en hierop kan nog verbeter word. Die premie is £2,000 en sluit meubels, instrumente en medisyne-voorraad in. Terme kan gereël word.
(Pr-S143) Transvaal. Een van die beste vennootskap-praktyke, word as 'n geheel te koop aangebied. Aanstellings aan die praktyk verbonde beloop ongeveer £3,500 per jaar. Die netto inkomste van die praktyk is £7,000 per jaar. Die premie is £3,000 en sluit alle medisyne en meubels in. Dit is van belang dat twee geneeshere hierdie praktyk saam koop, in welke geval elkeen £1,500 betaal. Terme kan gereël word. Volle besonderhede op aanvraag.
(Pr-S134) Transvaal. Partner is required with view to succession. Old-established dispensing, practice. Gross income over £4,000 p.a. House available to rent or to buy. Excellent opportunity for an Afrikaans speaking doctor to acquire a sound partnership/practice, with appointments. Small initial capital required.
(Pr-S125) Noord-Vrystaat. Groot hospitaaldorp, met goeie skole. 'n Goedgevestigde praktyk met 'n netto inkomste van oor £4,000 p.j. Praktyksonkoste aansienlik laag. Eienaar onderneem alle chirurgie. Een oordraagbare aanstelling van £26 p.m. Die premie is £2,500 en kan as volg afbetaal word: £1,000 kontant en balans teen £50 per maand. Dit sluit alle spreekkamertoerusting in.
(Pr-S136) Vrystaat. 'n Praktyk geskik vir twee jong geneeshere, wat saam wil praktiseer. 'n Ou-gevestigde praktyk met 'n aanstelling wat ongeveer £1,000 per jaar inbring. Die gemiddelde jaarlikse inkomste is £4,700/£4,900. Praktykonkoste is baie laag. Spreekkamers te huur teen £8 5s. 0d. per maand en 'n gerieflike woning teen £12 p.m. Eienaar doen geen snykunde nie, en alhoewel dit gedoen kan word, sal die praktyk 'n Internis, uitstekend pas. Premie is £2,000 en terme kan gereël word.
(Pr-S141) Johannesburg. Non-European practice, with two surgeries in excellent positions. No night work and no weekend work. Cash takings average £250 p.m. Expenses under £90 per month. This proposition will definitely suit someone wishing to expand or a beginner.

Provincial Administration of the Cape of Good Hope

VICTORIA HOSPITAL, WYNBERG

VACANCY : MEDICAL PRACTITIONER GRADE 'A'

(Salary Scale £500—£600—£660—£720)

Applications are invited from suitably qualified persons for appointment to the above post.

In addition to the salary scale indicated a temporary cost of living allowance, at rates prescribed from time to time by the Administrator, is payable. The present rate is £110 per annum for single persons and married women whose husbands are not in Government employment, and £352 per annum for married men.

The conditions of service are prescribed in terms of the Hospital Board Service Ordinance No. 19 of 1941, as amended from time to time, and the regulations framed thereunder.

The appointment will be on contract for two years in the first instance and may be renewed twelve months at a time up to a maximum of four years. The appointment may, however, be terminated by three months notice, in writing, on either side.

Applications should be submitted, in duplicate, on the prescribed form (Staff 23) which is obtainable from the Director of Hospital Services, P.O. Box 2060, Cape Town, or the Medical Superintendent of any provincial hospital or Secretary of any School Board in the Cape Province.

The completed application forms should be addressed to the Medical Superintendent, Wynberg, Orthopaedic and Convalescent Hospitals, P.O. Box 1487, 58 Loop Street, Cape Town.

Candidates should state the earliest date on which they will be able to assume duty.

M372202

Provincial Administration of the Cape of Good Hope

HOSPITALS DEPARTMENT

VACANCY : RONDEBOSCH AND MOWBRAY HOSPITAL MEDICAL PRACTITIONER GRADE 'A'

Applications are invited from suitably qualified candidates for appointment to the post of Medical Practitioner Grade 'A' at the above-mentioned Hospital with salary on the scale £500—600—660—720 per annum.

The minimum requirements for appointment to the above post will be; not less than three years experience after graduation or, two years experience after registration.

In addition, a temporary cost of living allowance at rates prescribed from time to time by the Administrator, is payable. The present rate is £352 per annum for a married person and £110 per annum for a single person.

The appointment of the successful candidate will be in terms of and subject to the provisions of the Hospital Board Service Ordinance No. 19 of 1941 and the regulations framed thereunder, and will be on contract for a period of one year with effect from the date of assumption of duty and subject to termination at any time on 90 days' notice on either side.

Applications should be submitted (in duplicate) on the prescribed form (Staff 23) which is obtainable from the Director of Hospital Services, P.O. Box 2060, 112 Loop Street, Cape Town, the Medical Superintendent, Woodstock, Rondebosch and Maternity Hospitals, Central Office, Mountain Road, Woodstock, the Medical Superintendent of any Provincial Hospital or the Secretary of any School Board in the Cape Province.

Applications must be addressed to the Medical Superintendent, Woodstock, Rondebosch and Maternity Hospitals, Central Office, Mountain Road, Woodstock, and should be posted to arrive not later than noon on Friday 26 November 1954.

Candidates must state the earliest date on which they can assume duty.

RW No. 999

Provinsiale Administrasie van die Kaap die Goeie Hoop

VICTORIA-HOSPITAAL, WYNBERG

VAKATURE : MEDIESE GENEESHEER GRAAD ‚A'

Aansoeke word ingewag van persone met geskikte kwalifikasies vir aanstelling tot die pos van Mediese Geneesheer Graad ‚A' by bogenoemde inrigting met salaris volgens die skaal £500—£600—£660—£720.

Benewens die salarisskaal soos aangedui is 'n lewekostetoelae betaalbaar aan voltydse beamptes en werknemers teen bedrae wat van tyd tot tyd deur die Administrateur vasgestel word. Die huidige tarief is £110 per jaar vir ongetroude persone of getroude vrouens wie se eggenote nie in die staatsdiens werksaam is nie, en £352 per jaar vir getroude mans.

Die diensvoorwaardes word voorgeskryf ingevolge die Ordonnansie op Hospitaalraaddiens nr. 19 van 1941, soos gewysig, en die regulasies daarkragtens opgestel.

Die aanstelling sal, in die eerste opsig, onder kontrak vir twee jaar wees en daarna hernubaar elke twaalf maande tot op 'n maksimum van vier jaar.

Die aanstelling mag daareenteen beëindig word by wyse van drie maande skriftelike kennisgewing aan beide kante.

Aansoek moet gedoen word, in duplo, op die voorgeskrewe vorm (Staf 23) wat verkrygbaar is by die Direkteur van Hospitaaldienste, Posbus 2060, Kaapstad, of by die Mediese Superintendent van enige provinsiale hospitaal of by die Sekretaris van enige skoolraad in die Kaapprovinsie.

Die voltooide aansoekvorms moet gerig word aan die Mediese Superintendent, Wynberg, Ortopediese en Herstellingshospitale, Posbus 1487, Loopstraat 58, Kaapstad.

Kandidate moet vroegste datum meld wanneer hulle diens kan aanvaar.

M372202

Provinsiale Administrasie van die Kaap die Goeie Hoop

HOSPITAALDEPARTEMENT

VAKATURE : RONDEBOSCH- EN MOWBRAY-HOSPITAAL GENEESHEER GRAAD ‚A'

Aansoeke word ingewag van geskikte gekwalifiseerde kandidate vir aanstelling tot die pos van Geneesheer Graad 'A' aan die bogenoemde inrigting met salaris op die skaal £500—600—660—720 per jaar.

Die minimum kwalifikasies vir aanstelling tot die bogenoemde pos is: minstens drie jaar ondervinding na ontvangs van graad of, twee jaar ondervinding na registrasie.

Benewens die salarisskaal is 'n lewenskostetoelaag betaalbaar teen tariewe wat van tyd tot tyd deur die Administrateur vasgestel word. Die teenswoordige tariewe is £352 per jaar vir getroude persoon en £110 per jaar vir 'n ongetroude persoon.

Die aanstelling van die suksesvolle kandidaat is onderworpe aan die bepalinge van die Hospitaalraadsdiens Ordonnansie no. 19 van 1941 soos gewysig en die regulasies daarkragtens opgestel en is op kontrak vir 'n tydperk van een jaar vanaf die datum van diensaanvaring en is onderworpe aan opsegging ter enige tyd na wedersydse kennisgewing van 90 dae.

Aansoeke moet voorgelê word in duplo op die voorgeskrewe vorm (Staf 23) wat verkrygbaar is van die Direkteur van Hospitaaldienste, Posbus 2060, Loopstraat 112, Kaapstad, die Mediese Superintendent, Woodstock, Rondebosch en Kraamhospitale, Sentrale Kantoor, Mountainweg, Woodstock, die Mediese Superintendent van enige Provinsiale Hospitaal of die Sekretaris van enige Skoolraad in die Kaapprovinsie.

Aansoeke moet gerig word aan die Mediese Superintendent, Woodstock, Rondebosch en Kraamhospitale, Sentrale Kantoor, Mountainweg, Woodstock, en moet gepos word om hom nie later as Vrydag om 12 uur middag, 26 November 1954, te bereik nie.

Applikante moet die vroegste datum vermeld waarop hulle diens kan aanvaar.

RW No. 999

S.W.A.H. 16 (E)

VACANT DISTRICT SURGEONCY

Applications for the under-mentioned District Surgeoncy, accompanied by particulars as to date and country of birth, qualifications, experience and previous and present appointments of applicants, should reach the Secretary for South West Africa, Windhoek, not later than 24 November 1954. Testimonials (copies) may be submitted, but canvassing by petition or otherwise should not be resorted to. The appointment is on a part-time basis and private practice is not precluded. Applicants should state whether they have a knowledge of both official languages. Surgical experience will be a recommendation. Applicants must state the earliest date on which duty can be assumed.

District: Okahandja.
Headquarters: Okahandja.
Salary: £480 p.a.

The salary mentioned covers all ordinary and routine services, but travelling allowance at 1/6 per mile for all mileage travelled beyond a radius of three miles from headquarters, night detention at 22/6 and supplementary fees for certain other services will be payable, also fees for attendance at courts and inquests in accordance with the tariff of the Administration's Branch of Justice.

Applications should be submitted on form Z. 83 obtainable from Magistrates' offices. 47628

Provincial Administration of the Cape of Good Hope

VICTORIA HOSPITAL, WYNBERG

HONORARY MEDICAL APPOINTMENT

Applications are invited from registered Medical Practitioners under the age of sixty years for appointment to the post of General Practitioner (Surgical Division) at the Victoria Hospital, Wynberg.

The successful applicant will be required to assume duty on 1 January 1955.

The annual honorarium payable before the thirty-first day of March of each year shall be calculated by multiplying the average number of in-patients treated in the hospital during the preceding calendar year by £10, provided that no member of the honorary medical staff shall be apportioned more than £105 per annum.

Applications stating age, qualifications, etc., should be forwarded to reach the Medical Superintendent, Central Office, 58 Loop Street, Cape Town, or P.O. Box 1487, Cape Town, not later than noon on Saturday, 27 November 1954.

M372202

Conradie Hospital, Pinelands

VACANCIES : HONORARY MEDICAL STAFF

Applications are invited from registered medical practitioners under the age of 60 years for appointment to the undermentioned honorary medical posts:

Anaesthetist,
Assistant Urologist.

The appointments will be for the period ending 31 December 1956 and are subject to the Hospitals Ordinance No. 18 of 1946 (Cape), as amended, and to the regulations framed thereunder.

Applications stating full particulars of age, qualifications and experience, should be addressed to the Medical Superintendent to reach his office by not later than 20 November 1954.

2968

ASSISTENT BENODIG

Assistent dringend benodig in gevestigde plattelandse tweemanpraktyk met D.G. en S.A.S. aanstellings. Vooruitsig tot vennootskap indien geskik, binne kort tyd. Snykunde-ondervinding sal 'n aanbeveling wees. £3 3s. 0d. per dag plus reistoelae. Moet eie motor hê. Doen aansoek A.W.P., Posbus 643, Kaapstad.

S.W.A.H. 16 (A)

VAKANTE BETREKKING VIR DISTRIKSGENEESHEER

Applikasies vir die ondergenoemde pos van Distriksgeneesheer, met vermelding van datum en land van geboorte, kwalifikasies, ondervinding en vorige en teenswoordige aanstellings word deur die Sekretaris van Suidwes-Afrika, Windhoek, ingewag, en moet hom nie later as 24 November 1954 bereik nie. Getuigskrifte (afskrifte) kan ingestuur word, maar geen versoek om ondersteuning van applikasie word toegelaat nie. Applikante moet vermeld of hulle 'n kennis van albei amptelike tale besit. Die aanstelling is van 'n deeltydse aard en private praktyk word toegelaat. Chirurgiese ervaring sal 'n aanbeveling wees. Applikante moet die vroegste datum meld wanneer hulle dienste kan aanvaar.

Distrik: Okahandja.
Hoofkwartiere: Okahandja.
Salaris: £480 p.j.

Die genoemde salaris dek alle gewone en roetine dienste maar reistoelae teen 1/6 per myl vir alle afstande afgelê buite drie myl vanaf Hoofkwartiere, nagverblyf teen 22/6 en bykomende vergoeding vir sekere ander dienste word betaal, en ook vergoeding vir bywoning van Hofsittings en ondersoeke, ooreenkomstig die tarief van die Administrasie se Afdeling van Justisie.

Applikasies moet ingedien word op vorm Z. 83, wat van enige Magistraatskantoor verkrygbaar is. 47628

Provinsiale Administrasie van die Kaap die Goeie Hoop

VICTORIA-HOSPITAAL, WYNBERG

ERE-MEDIESE AANSTELLING

Aansoeke word ingewag van geregistreerde mediese geneeshere onder die ouderdom van sestig jaar vir aanstelling tot die pos van Algemene Geneesheer (Snykundige Afdeling) by die Victoria-hospitaal, Wynberg.

Die suksesvolle applikant moet dienste aanvaar op 1 Januarie 1955.

Die jaarlikse honorarium betaalbaar aan die ere-mediese personeel voor die een-en-dertigste dag van Maart elke jaar sal bereken word deur die gemiddelde daaglikse getal binnepasiënte wat gedurende die voorafgaande kalenderjaar in die hospitaal is, met £10 te vermenigvuldig, met dien verstande dat geen lid van die ere-mediese personeel meer as £105 per jaar mag ontvang nie.

Aansoeke wat melding maak van ouderdom, kwalifikasies ensovoorts moet gestuur word aan die Mediese Superintendent, Sentrale Kantoor, Loopstraat 58, of Posbus 1487, Kaapstad, om hom nie later as twaalf middag op Saterdag, 27 November 1954 te bereik nie. M372202

Conradie-Hospitaal, Pinelands

ERE-MEDIESE AANSTELLINGS

Aansoeke word ingewag van geregistreerde mediese praktisyns onder die ouderdom van sestig jaar om aanstelling in die volgende ere-mediese vakatures:

Narkotiseur,
Assistent-Uroloog.

Die aanstelling sal vir die tydperk eindigende 31 Desember 1956 geldig wees en geskied ingevolge die Kaapse Ordonnansie op Hospitale, nr. 18 van 1946, soos gewysig, en die regulasies daarvolgens opgestel.

Aansoeke waarin ouderdom, kwalifikasies en ondervinding gemeld word, moet die Mediese Superintendent bereik nie later nie as 20 November 1954.

2968

ST. MONICA'S HOME

HONORARY OBSTETRICIAN

Applications are invited for the above post and should reach the Honorary Medical Superintendent, St. Monica's Home, Lion Street, Cape Town, not later than 27 November 1954.

Tzaneen Village Council

VACANCY : PART-TIME MEDICAL OFFICER OF HEALTH

Applications are hereby invited from qualified Medical Practitioners for appointment to the post of Part-Time Medical Officer of Health at a salary of £15 per month.

The appointment is subject to the approval of the Department of Health and the completion of a contract of service.

Applications stating age, qualifications, experience etc. must reach the undersigned not later than Saturday 30 October 1954.

Canvassing is prohibited and proof thereof will disqualify an applicant.

J. J. Botha
Town Clerk

Municipal Offices
Tzaneen
15 October 1954

Dorpsraad van Tzaneen

VAKATURE : DEELTYDSE MEDIESE GESONDHEIDSBEAMPTE

Aansoeke word hiermee ingewag van gekwalifiseerde Mediese Praktisyns vir aanstelling tot die pos van Deeltydse Mediese Gesondheidsbeampte teen 'n salaris van £15 per maand.

Die aanstelling is onderhewig aan die goedkeuring van die Departement van Gesondheid en onderworpe aan die ondertekening van 'n ooreenkoms.

Aansoeke wat melding maak van ouderdom, kwalifikasies, ondervinding ens. moet die ondergetekende bereik nie later as Saterdag 30 Oktober 1954 nie.

Stemwerwing is verbode en bewys daarvan sal 'n applikant diskwalifiseer.

J. J. Botha
Stadsklerk

Munisipale Kantore
Tzaneen
15 Oktober 1954

Provincial Administration of the Cape of Good Hope

HOSPITALS DEPARTMENT
HOSPITAL BOARD SERVICE : VACANCIES

1. Applications are invited from Registered Medical Practitioners for appointment to the following vacant posts:

Division	*Posts*	*Hospital*	*Emoluments*	*Closing Date*
Professional and Technical	Medical Practitioner, Grade A. (Casualty Department)	Frere Hospital, East London	£500—600—660—720 per annum	26 November 1954
	Medical Practitioner Grade B.	Livingstone Hospital, Port Elizabeth	£720x40—960 per annum	26 November 1954

2. The conditions of service are prescribed in terms of Hospital Board Service Ordinance No. 19 of 1941, as amended, and the regulations framed thereunder.

3. In addition to the scale of salary indicated a cost of living allowance at rates prescribed from time to time by the Administrator is payable to whole-time officials and employees.

4. Applications should be addressed to the Medical Superintendent of the Hospital concerned.

5. The successful candidates, if not already in the Hospital Board Service, will be required to submit satisfactory birth and health certificates.

6. Application must be made on the prescribed form (Staff 23) which is obtainable from the Director of Hospital Services, P.O. Box 2060, Cape Town. or from the Medical Superintendent of any Provincial Hospital or Secretary of any School Board in the Cape Province.

7. Candidates must state the earliest date on which they can assume duty.

M129305

Provinsiale Administrasie van die Kaap die Goeie Hoop

HOSPITAALDEPARTEMENT

1. Aansoeke word ingewag van mediese gegradueerdes vir aanstelling in die betrekking van Junior Inwonende Mediese Beampte (intern) aan die ondergemelde inrigtings:

Conradie-hospitaal, Pinelands	5 poste
Valsbaai-hospitaal, Simonstad	1 pos
Groote Schuur-hospitaal, Observatory, Kaap	—
Mowbray-kraamhospitaal, Mowbray, Kaap	2 poste
Skiereilandse Kraamhospitaal, Kaap	3 poste
Rondebosch en Mowbray-hospitaal, Kaap	2 poste
Victoria-hospitaal, Wynberg, Kaap	4 poste
Somerset-hospitaal, Groenpunt, Kaap	10 poste
Woodstock-hospitaal, Woodstock, Kaap	3 poste
Frere-hospitaal, Oos-Londen	10 poste
Setlaars- en Prince Alfred-hospitaal, Grahamstown	2 poste *
Victoria-hospitaal, Lovedale	6 poste *
Paarl-hospitaal, Paarl	1 pos *
Provinsiale-hospitaal, Port Elizabeth	8 poste *
Sir Henry Elliot-hospitaal, Umtata	5 poste *
Livingstone-hospitaal, Port Elizabeth	11 poste *
Frontier-hospitaal, Queenstown	3 poste*

* Kontraktydperk met ingang van 1 Januarie 1955.

2. Die salaris verbonde aan 'n pos van Junior Inwonende Mediese Beampte (intern) bedra £240 per jaar, plus losies, inwoning en wasgoed.

3. Benewens die salaris en toelae hierbo vermeld, is daar 'n tydelike nie-pensioengewende duurtetoeslag betaalbaar volgens die skaal en op voorwaardes wat van tyd tot tyd deur die Administrateur voorgeskryf word.

4. Kandidate wat om meer as een betrekking aansoek doen, moet afsonderlike aansoeke en afskrifte van getuigskrifte voorlê vir elke betrekking waarom aansoek gedoen word.

5. Kandidate wat die finale M.B., Ch.B. eksamen skryf kan hulle aansoeke instuur voordat die uitslag van die eksamen bekend is.

6. Van die geslaagde kandidate word vereis om 'n kontrak met die Provinsiale Administrasie met ingang van 16 Januarie 1955 (tensy andersins gemeld) aan te gaan, en hulle moet by die Suid-Afrikaanse Mediese Raad geregistreer wees voordat hulle toegelaat sal word om diens te aanvaar.

7. Kandidate wat as interns by Groote Schuur-hospitaal, Kaapstad, aangestel wil word moet:

(1) Meld of hulle gewillig is om enige pos van intern aan te neem wat hulle aangebied word; en

(2) hul voorkeur ten opsigte van die volgende afdelings aandui deur 1, 2, 3, ens., teenoor die afdelings te skryf:

(*a*) Algemene Geneeskunde.
(*b*) Algemene Heelkunde.
(*c*) Ginekologie en Verloskunde.
(*d*) Ander departemente moet deur applikante vermeld word.

Dit is van voorneme dat kandidate in een of meer van die bovermelde departemente afgewissel sal word.

8. Aanstellings geskied ooreenkomstig en onderworpe aan die bepalings van Ordonnansie no. 19 van 1941, soos gewysig, en die regulasies wat daarkragtens opgestel is.

9. Aansoek moet gedoen word op die voorgeskrewe vorm (Staf 23) wat verkrygbaar is by die Direkteur van Hospitaaldienste, Posbus 2060, Kaapstad, of by die Mediese Superintendent van enige Provinsiale Hospitaal of by die Sekretaris van enige Skoolraad in die Kaapprovinsie.

10. Die ingevulde aansoekvorms moet gerig word aan die Mediese Superintendent van die betrokke inrigting, en moet hom nie later as 27 November 1954 bereik nie. M129289

SMALL PRACTICE DESIRED

Practitioner desires purchase of small practice. East London or Port Elizabeth. Only minor surgery undertaken. Apply A.W.Q., P.O. Box 643, Cape Town.

Provincial Administration of the Cape of Good Hope

LIVINGSTONE HOSPITAL, PORT ELIZABETH
VACANCY : HONORARY MEDICAL STAFF

Applications are invited from registered medical practitioners for appointment to the vacant post of Honorary Assistent Anaesthetist on the staff of this Hospital.

The appointment which is subject to the Hospital's Ordinance No. 18 of 1946 (Cape) as amended, and the regulations framed thereunder, will expire on the anniversary of the date on which the Medical Committee for this hospital is elected.

Applications which must be made on the prescribed form, Staff 23, must be submitted to the Medical Superintendent, Livingstone Hospital, Port Elizabeth, to reach his office not later than Friday 3 December 1954.

J. L. G. Ware
Medical Superintendent

Livingstone Hospital
Port Elizabeth
20 October 1954

4661

Lyttelton Health Committee

VACANCY : PART-TIME MEDICAL OFFICER OF HEALTH
NOTICE NO. 11/54

Applications are invited in terms of Section 12 of the Public Health Act No. 36 of 1919 as amended and Section 62 of the Local Authorities Ordinance No. 17 of 1939 as amended, from registered medical practitioners for appointment as part-time Medical Officer of Health to the above Local Authority.

The salary attached to the post will be £120 per annum.

Applications containing full details regarding qualifications, etc., must reach the undersigned not later than Monday 22 November 1954.

J. H. Blignaut
Secretary

Office of the Scretary
P.O. Box 13
LYTTELTON
19 October 1954

538

Municipality of Pietersburg

VACANCY : PART-TIME SURGEON

Applications are invited for the position of Part-Time Surgeon at the Isolation Hospital of the Pietersburg Town Council.

A salary of £50 per annum is paid. Full details of duties may be obtained on application to the Medical Officer of Health, Pietersburg.

Applications must reach the undersigned not later than 12 noon on Tuesday 9 November 1954.

J. A. Botes
Town Clerk

Municipal Offices
Pietersburg
19 October 1954

4045

TE KOOP—FOR SALE

Draagbare X-straal-masjien, sluit in fluoroskoop, 2×2-gellingtenks (eboniet), 1 Cassette, 12 films, timor ens. Skrywe aan A.W.R., Posbus 643, Kaapstad.

Portable X-ray Machine, includes fluoroscope 2×2 gallon tanks, 1 Cassette, 12 films, timor, etc. Write to A.W.R., P.O. Box 643, Cape Town.

PLAASVERVANGER BENODIG

Plaasvervanger benodig vanaf 10 Desember tot 15 Januarie. Salaris £3 3s. 0d. per dag, vry losies, petrol en olie, en £10 per duisend myl motortoelae. Skrywe aan A.W.S., Posbus 643, Kaapstad.

Provinsiale Administrasie van die Kaap die Goeie Hoop

LIVINGSTONE-HOSPITAAL, PORT ELIZABETH
VAKATURE ERE-MEDIESE PERSONEEL

Aansoeke word ingewag van geregistreerde geneeshere vir aanstelling tot die pos van Ere-assistent-Narkotiseur op die ere-personeel van hierdie hospitaal.

Die aanstelling, wat onderworpe is aan die Hospitaalordonnansie No. 18 van 1946 (Kaap) soos gewysig, en die regulasies wat daarkragtens opgestel is, sal verstryk twaalf maande na die datum waarop die Mediese Komitee vir hierdie hospitaal verkies is.

Aansoeke, wat op die voorgeskrewe vorm (Staf 23) gemaak, en gerig moet word aan die Mediese Superintendent, Livingstone-Hospitaal, Port Elizabeth, moet sy kantoor nie later as 3 Desember 1954 bereik nie.

J. L. G. Ware
Mediese Superintendent

Livingstone-Hospitaal
Port Elizabeth
20 Oktober 1954

4661

Gesondheidskomitee van Lyttelton

VAKATURE : DEELTYDSE MEDIESE GESONDHEIDSBEAMPTE
KENNISGEWING NR. 11/54

Aansoeke word ingewag ingevolge die bepalings van Artikel 12 van die Gesondheidswet nr. 36 van 1919 soos gewysig en Artikel 62 van die Ordonnansie op Plaaslike Bestuur nr. 17 van 1939 soos gewysig, van geregistreerde Geneeshere, vir aanstelling as Deeltydse Mediese Gesondheidsbeampte, in diens van bogemelde Plaaslike Bestuur.

Die salaris verbonde aan die betrekking, bedra £120 per jaar.

Aansoeke met vermelding van kwalifikasies, ens., moet die ondergetekende, bereik nie later nie as Maandag 22 November 1954.

J. H. Blignaut
Sekretaris

Kantoor van die Sekretaris
Posbus 13
Lyttelton
19 Oktober 1954

538

Munisipaliteit van Pietersburg

VAKATURE : DEELTYDSE CHIRURG

Aansoeke word ingewag vir die betrekking van deeltydse Chirurg by die Afsonderingshospitaal van die Pietersburgse Stadsraad.

'n Salaris van £50 per jaar word aangebied. Volledige besonderhede van dienste kan van die Stadsgeneesheer, Pietersburg, verkry word.

Aansoeke om hierdie betrekking met die ondergetekende nie later as 12-uur middag, op Dinsdag 9 November 1954, bereik nie.

J. A. Botes
Stadsklerk

Munisipale Kantore,
Pietersburg
19 Oktober 1954

4045

ST. MONICA'S HOME
OBSTETRICAL HOUSE SURGEON

Applications are invited for the above post and should reach the Honorary Medical Superintendent, St. Monica's Home, Lion Street, Cape Town, not later than 27 November 1954.

Duty will commence on 16 January 1955. Salary, including cost of living allowance is £23 16s. 4d. per month. Free Board and Lodging.

LOCUM REQUIRED

Locum required for partnership 1 January to end of February 1955. Own car not essential, £3 3s. 0d. per day, all found. Eastern Free State. Apply A.W.O., P.O. Box 643, Cape Town.

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